MONTANA FISH, WILDLIFE AND PARKS
FISHERIES DIVISION

Draft Environmental Assessment: Upper Overwhich Creek Fish Removal Project

For the removal of non-native and hybridized cutthroat trout upstream of Overwhich Falls to prevent genetic contamination of pure Westslope Cutthroat Trout in the West Fork Bitterroot Basin above Painted Rocks Dam

May 2017

PART I: PROPOSED ACTION DESCRIPTION

A. Type of Proposed Action

The project that is being proposed is to remove fish from Overwhich Creek and its tributaries, upstream of Overwhich Falls using rotenone, a piscicide. Genetic data indicates that most of the cutthroat trout throughout the upper West Fork Bitterroot River drainage are pure Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi)* whereas the fish upstream of Overwhich Falls are Westslope Cutthroat x Yellowstone Cutthroat (*O. clarkii bouvieri)* hybrids. The fish above Overwhich Falls would be removed to prevent any further hybridization downstream.

B. Agency Authority for the Proposed Action

Section (§) 87-1-201, Montana Code Annotated (MCA). Power and duties of the Department of Fish, Wildlife and Parks.

Three sections of this statute authorize the department to conduct the action proposed in this Environmental Assessment:

- In § (1), "…the department shall supervise all the wildlife, fish, game, game and nongame birds, waterfowl, and the game and fur-bearing animals of the state…"
- In § (3), "The department has the exclusive power to spend for the protection, preservation, management, and propagation of fish, game, fur-bearing animals, and game and nongame birds all state funds collected or acquired for that purpose…"
- § (9)(a)(ii) of 87-1-201 authorizes the department to implement programs that "manage listed species, sensitive species, or a species that is a potential candidate for listing under …the federal Endangered Species Act…".

Some of the history of how the department has proceeded with protection of Westslope Cutthroat Trout was summarized by Montana Fish, Wildlife & Parks (MFWP 2006):

> In 1973, the Montana Legislature passed the Non-game and Endangered Species Conservation Act that established the "species of interest or concern" policy to preserve sensitive species with the hope that no Montana fish species would be listed as threatened or endangered under the federal Endangered Species Act. The Westslope Cutthroat Trout

was among the first species to be placed on the states list. In 1977, Governor Thomas Judge signed the law designating the Westslope Cutthroat Trout as Montana's official state fish, recognizing it as part of our natural heritage. Part of the purpose was to bring attention to the species, so conditions for these fish could be improved. In the 1980's MFWP stepped up its commitment to conserving this species in the Flathead basin by: 1) developing a genetically pure and genetically diverse hatchery stock of Westslope Cutthroat Trout suitable for conservation purposes, 2) implementing management concepts such as genetic swamp out, 3) instituting more restrictive angling regulations, and 4) actively removing non-native trout using piscicides. These measures are principally responsible for the slow rate of progression and in some cases the reduction of hybridization; nevertheless, the threat still exists.

In 1996, Governor Marc Racicot convened a cutthroat trout summit to identify the status, distribution, threats to, and conservation needs of the Westslope Cutthroat Trout in Montana. In 1999 a Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout in Montana (Conservation Agreement) was developed and signed by Montana Fish, Wildlife & Parks, U.S. Fish & Wildlife Service, Bureau of Land Management, Forest Service, Natural Resources Conservation Service, Montana Department of Environmental Quality, Montana Department of Natural Resources and Conservation, Westslope Cutthroat Trout Technical Committee, Montana Chapter of American Fisheries Society, and Montana Wildlife Federation. The goal of the Conservation Agreement is to ensure the long term, self-sustaining persistence of the species within each of the five major river drainages they historically inhabited in Montana, and to maintain the genetic diversity and life history strategies represented by the remaining local populations. The agreement lists five objectives to achieve this goal; primary among them is to protect all genetically pure Westslope Cutthroat Trout populations. In 1999 the "species of concern" list status of the Westslope Cutthroat Trout was elevated to category S2 meaning that the species is imperiled because of rarity or because of other factors demonstrably making it very vulnerable to extinction throughout its range. This project will be carried out in accord with the guidelines of the most recent Conservation Agreement in consultation with the Cutthroat Technical team.

From 1997 through 2005 the Westslope Cutthroat Trout has been the subject of numerous petitions, analyses, decisions, appeals and rulings for consideration for protection under the federal Endangered Species Act (ESA). Despite these actions by plaintiffs, this species has not been listed under the ESA and, at the time of this ROD, remains under the management jurisdiction of the state of Montana. Montana Fish, Wildlife & Parks is responsible for, and mandated by statute MCA 87-1-201[9ai] to, manage wildlife, fish, game and non-game animals in a manner that prevents the need for listing under MCA 87-5-107 or under the federal Endangered Species Act, and [ii] manage listed species, sensitive species, or a species that is a potential candidate for listing by the state (87-5-107) or under the federal Endangered Species Act in a manner that assists in the maintenance or recovery of those species.

Many of the same rationale apply to this project. Survey data indicate that a minimum of 199 miles of stream (West Fork Bitterroot watershed) upstream of Painted Rocks Reservoir support Westslope Cutthroat Trout. Yellowstone Cutthroat Trout and hybrid Westslope x Yellowstone Cutthroat Trout have been found in Overwhich Creek upstream of Overwhich Falls and a short reach in Overwhich Creek downstream of the falls.

In addition to the Westslope Cutthroat Trout Memorandum of Understanding and Conservation Agreement (MOU) signatories cited above, the MOU was also signed by American Wildlands, the Montana Farm Bureau, the Montana Stockgrowers Association, Montana Trout Unlimited, and private landowners.

The Westslope Cutthroat Trout MOU was updated in 2007 and coupled with a similar document for Yellowstone Cutthroat Trout (MFWP 2007). The Blackfeet Tribal Business Council, the Confederated Salish and Kootenai Tribes, the Federation of Fly Fishers, the Greater Yellowstone Coalition, the Montana Cutthroat Trout Technical Committee and the Montana Department of Environmental Quality joined the original participants in the 2007 document. Plum Creek Timber Company provided a letter of support for the 2007 agreement, citing their 30-year agreement with the USFWS to the Native Fish Habitat Conservation Plan for Plum Creek properties.

C. Estimated Commencement Date
August 2017.

D. Name and Location of the Project
Upper Overwhich Creek fish removal project.

The project site is located in Ravalli County approximately 30 miles from the town site of Darby, Montana; Overwhich Falls is located at T1S, R20W, Sec 28 (Figure 1). The stream is located primarily on the Bitterroot National Forest.

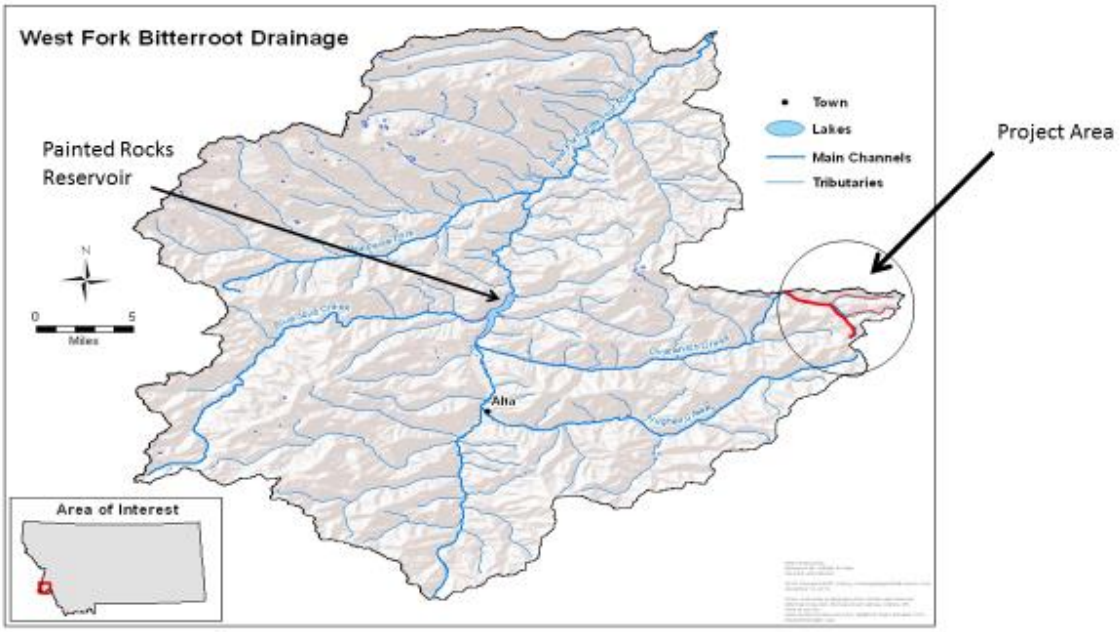

FIGURE 1. Map of the West Fork Bitterroot River showing the location of the proposed project area**.**

Overwhich Creek is about 19.5 stream miles long (Figure 1). The distance from the mouth where it enters the West Fork Bitterroot River to Overwhich Falls is about 15.5 stream miles. The project area is upstream of the falls. From the falls to the headwaters of Overwhich Creek is about 4 stream miles. Colter and Shields Creeks would also be treated. Each of these streams is between 2 and 3 miles long.

Frog Pond Lake is a small pond in the upper reaches of Overwhich Creek and would be inspected for possible treatment prior to the project implementation. It is a very shallow body of water and there is no record of any fish being stocked in Frog Pond Lake.

E. Project Size (acres affected)

1. Developed/residential – 0 acres
2. Industrial – 0 acres
3. Open space/Woodlands/Recreation – 10 miles of stream
4. Wetlands/Riparian – 10 miles of stream

The streamflows in these streams was estimated during August 2014 (Table 1).

TABLE 1. On 8/28/2014 streamflows (CFS, cubic feet per second) were estimated using width/depth measurements and estimating stream velocity.

Location	Estimated Streamflow (CFS)
Colter Creek Above unnamed tributary	8.6
Colter Creek at Mouth	6.3
Overwhich Creek above Colter Creek	5.0
Overwhich Creek below Shields Creek	13.9

F. Narrative Summary of the Proposed Action and Purpose of the Proposed Action

Overwhich Creek is a tributary to the West Fork Bitterroot River. It enters the West Fork about ½ mile upstream of Painted Rocks Reservoir (Figure 1). Most of the creek flows through the Bitterroot National Forest; however, the lowest mile flows through private property. The project area is upstream of Overwhich Falls, approximately 15.5 stream miles upstream of the mouth.

The removal of fish from Overwhich Creek above Overwhich Falls is proposed because a significant amount of genetic testing of Westslope Cutthroat Trout upstream of Painted Rocks Reservoir has indicated that nearly all of the stream populations are not hybridized (Figure 2). This project is being proposed to eliminate a known source of Yellowstone Cutthroat Trout genetics and prevent future introgression of Yellowstone Cutthroat Trout genes into the predominantly pure Westslope Cutthroat Trout populations that occur throughout the rest of the West Fork Bitterroot River drainage above Painted Rocks Dam.

The fishery in Overwhich Creek is typical for a mountain stream in this area. Westslope Cutthroat Trout are the predominant species, with fewer Bull Trout, Brook Trout, Mountain Whitefish, and Longnose and Largescale Suckers. Longnose Dace and Slimy Sculpins are also found in Overwhich Creek. In the project area, upstream of Overwhich Falls, the only species present are hybrids of Yellowstone and Westslope Cutthroat Trout (Tables 2 and 3). Genetic data indicate that genetically pure Westslope Cutthroat Trout predominate downstream of Overwhich Falls (Table 4). However, samples collected in 2009 by a Forest Service Research crew indicated that the fish downstream of Overwhich Falls were mostly pure Westslope Cutthroat Trout but some individuals may also be introgressed with Yellowstone Cutthroat Trout (Table 4).

Overwhich Falls is a natural barrier that blocks all upstream fish movement.

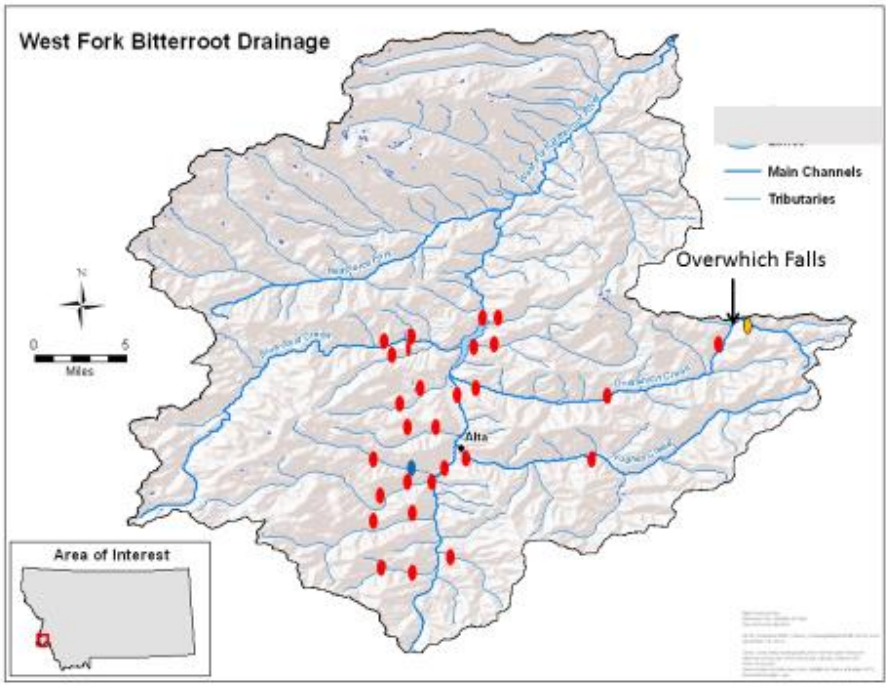

FIGURE 2. Results of genetic testing of Westslope Cutthroat Trout in streams upstream of Painted Rocks Dam. Red markers indicate pure strain Westslope Cutthroat Trout. The blue marker indicates one fish that was hybridized with Rainbow Trout. The yellow marker indicates Yellowstone Cutthroat and Westslope x Yellowstone Cutthroat Trout hybrids (Overwhich Creek).

TABLE 2. A summary of fish observed in 4 reaches (total length = 400 m) of Overwhich Creek upstream of Overwhich Falls during 7/28 and 7/29, 2009

Date	Species	Number Observed
7/28 and 7/29/2009	WCTxYCT	89

TABLE 3. Genetic information from samples collected in Overwhich Creek upstream of Overwhich Falls

Date Sampled	Number	Species	Method
8/09/1996	9	WCTxYCT	Electrophoresis
7/29/2009	8	WCTxYCT	Microsatellite
9/06/2009	12	WCTxYCT	SNPS

TABLE 4. Genetic information from samples collected in Overwhich Creek downstream of Overwhich Falls.

Date Sampled	Number	Species	Method
8/2,4,14/2012	21	WCT	SNPS
9/3, 9/6/2009	42	WCT (39), WCTxYCT (3)	SNPS

Rocky Mountain Tailed Frogs *(Ascaphus montanus)*, and most likely, Columbia Spotted Frogs *(Rana luteiventris)* and Western Toads *(Bufo boreas)* are found in the project area. A significant number of

Rocky Mountain Tailed Frogs reside in Overwhich Creek upstream of Overwhich Falls. To preserve the reach above Overwhich Falls for amphibians, fish would not be re-introduced into Overwhich Creek after the project, as historically, this reach was most likely fishless. If we are unable to remove all of the fish upstream of Overwhich Falls, we may stock pure strain Westslope Cutthroat Trout from nearby streams to "swamp" the remaining Yellowstone Cutthroat Trout that manage to survive upstream of the falls.

Upstream of Painted Rocks Reservoir a minimum of 199 miles of stream support Westslope Cutthroat Trout. It is likely that more stream mileage is occupied by Westslope Cutthroat Trout above the reservoir, but many of the smaller streams have not been sampled (Figure 3). The West Fork Bitterroot River upstream of Painted Rocks Reservoir encompasses one of the largest areas that has tested the genetic purity of Westslope Cutthroat Trout in Montana (Figure 4).

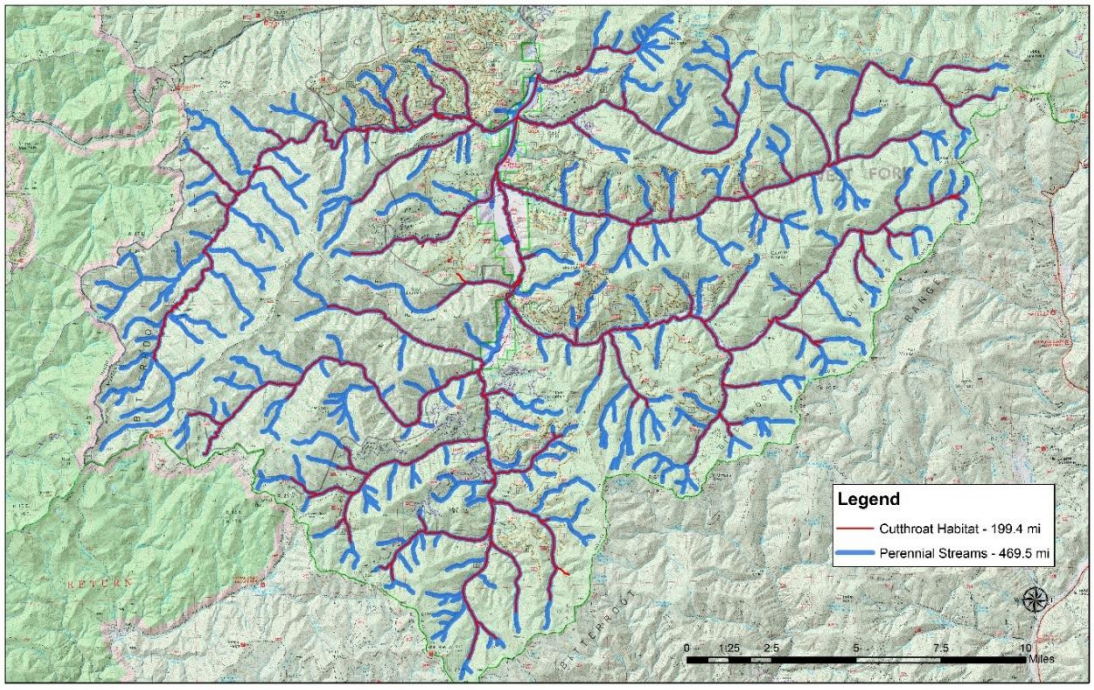

FIGURE 3. Miles of perennial stream and known Westslope Cutthroat habitat upstream of Painted Rocks Reservoir.

Overwhich Creek is identified as >25% introgressed, whereas, most of the streams in that area are identified as unaltered (Figure 5). The introgressed area consists of the 10-miles of Overwhich, Colter and Shields creeks above Overwhich Falls. It appears that some introgression has also occurred just downstream of Overwhich Falls (Table 4).

Stocking records indicate that Overwhich Creek was stocked with undesignated cutthroat trout between 1931 and 1954. The records do not indicate the exact location of the stocking. Capri Lake, which is about one mile from Overwhich Falls but is in the Warm Springs Creek drainage, was stocked with Yellowstone Cutthroat Trout in 1967, as well as undesignated Cutthroat Trout in 1952 and Westslope Cutthroat Trout in 1979. It is possible that some fish were also stocked in Overwhich Creek upstream of Overwhich Falls at the same time because Capri Lake is most easily accessed from the Forest Service trail that parallels Overwhich Creek upstream of the falls.

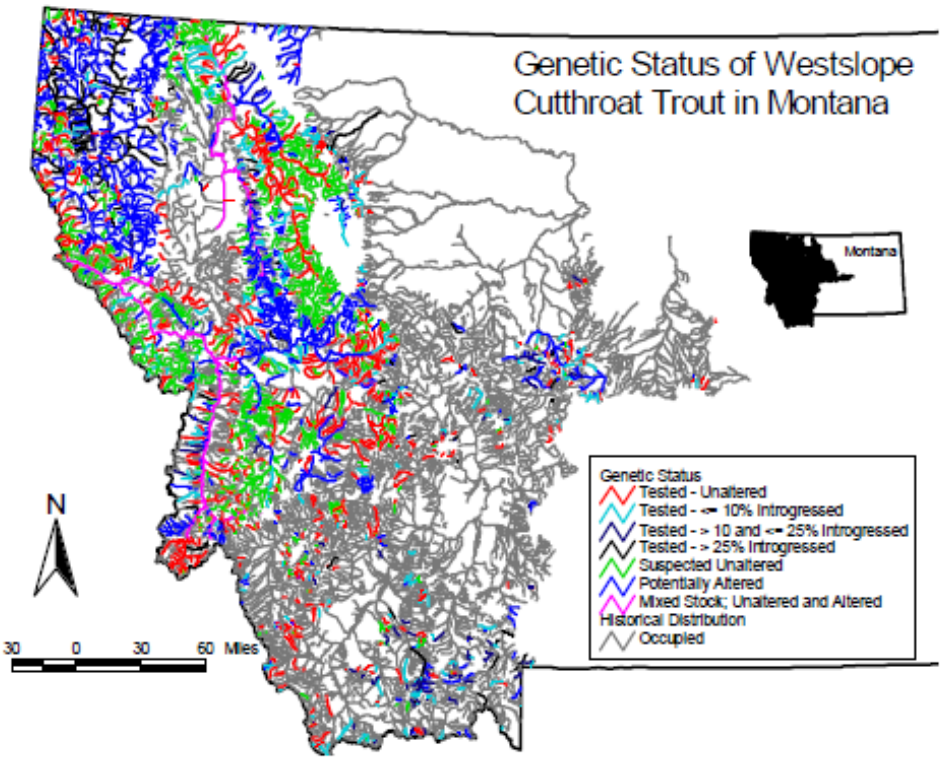

FIGURE 4. Populations of Westslope Cutthroat in Montana by genetic status overlaying historical ranges (gray lines). (from the Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout and Yellowstone Cutthroat Trout in Montana. 2007).

FIGURE 5. Genetic status of Westslope Cutthroat Trout in the West Fork Bitterroot River upstream of Painted Rocks Reservoir. (from the Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout and Yellowstone Cutthroat Trout in Montana. 2007). The stream in black is Overwhich Creek. Only the upper reaches, upstream of and just downstream of Overwhich Falls are introgressed. Most of Overwhich Creek is identified as pure Westslope Cutthroat Trout.

Fishing pressure estimates in Overwhich Creek (2005-2009) from the Montana Statewide Angler Pressure Survey indicate that approximately 90-205 angler days occurred per year. Most likely, the majority of the angling pressure occurs in the lower more accessible reaches. It is unknown how much angling pressure occurs upstream of Overwhich Falls. Due to the remote nature of this reach of stream and its relatively small size, fishing pressure is thought to be light.

Colter and Shields Creeks: These small tributaries are also included in the project. The fish in each of these streams also appear to be hybrids of Westslope Cutthroat and Yellowstone Cutthroat Trout (Table 5).

TABLE 5. Summary of fish sampling in Colter and Shields Creek.

Stream	Date	Fish	Number
Colter Creek			
Stream Mile 0.5-1.0	8/28/2014	WCTxYCT	Very low densities
Stream Mile 1.1	8/28/2014		No fish
Stream Mile 0.4 (snorkel)	7/29/2009	WCTxYCT	11 in 100 meters
Shields Creek			
Stream Mile 0.2	8/28/2014		No fish
Stream Mile 0.1 (Snorkel)	7/29/2009	WCTxYCT	4 in 100 meters

Painted Rocks Reservoir: Panted Rocks Reservoir would not be impacted by the project, but the stocking and fish sampling history of the Reservoir are of interest. The Reservoir was stocked with several species of fish, in various sizes, beginning in 1940 (Table 6).

TABLE 6. Species and Number of fish stocked in Painted Rocks Reservoir.

Species	Number Stocked	Years
Rainbow Trout	299,701	1940-1974
Coho Salmon	63,560	1941-1951
Westslope Cutthroat	47,635	1975-1984
Cutthroat Trout	12,000	1943

For this project the most pertinent species that were stocked are Rainbow Trout (*O. mykiss)* and undesignated Cutthroat Trout (most likely Yellowstone Cutthroat or Westslope Cutthroat Trout). Either of these species could hybridize with the native Westslope Cutthroat Trout that are the conservation target of this project. Since stocking of Rainbow Trout lasted for 35 years, hybridization with native Westslope Cutthroat Trout would seem likely. Gillnet sampling history of fish from Painted Rocks Reservoir is illustrated in Tables 7 and 8.

The gillnet sampling of Painted Rocks Reservoir does indicate the presence of Rainbow Trout during the years of stocking (Table 7). However, subsequent gillnet samples taken in recent years did not capture any fish that visually appeared to be Rainbow Trout or Rainbow Trout x Westslope Cutthroat Trout hybrids (Table 8). Differentiating Rainbow Trout x Westslope Cutthroat hybrids from Rainbow Trout or

Westslope Cutthroat Trout is very difficult, so there is a possibility that some of the fish identified as Westslope Cutthroat Trout in recent sampling are hybrids.

TABLE 7. Fish captured in gillnets set in Painted Rocks Reservoir during 1967 and 1972.

Species	Number
Westslope Cutthroat	19
Rainbow Trout	5
Bull Trout	44
Brook Trout	3
Mountain Whitefish	9
Longnose Sucker	426
Largescale Sucker	69
Redside Shiner	10

TABLE 8. Fish Captured in gillnets set in Painted Rocks Reservoir between 1995 and 2007.

Species	Number
Westslope Cutthroat	57
Rainbow Trout	0
Bull Trout	74
Brook Trout	2
Mountain Whitefish	10
Longnose Sucker	6
Largescale Sucker	13
Redside Shiner	4

The goal of this project is to remove the Yellowstone Cutthroat Trout and their hybrids upstream of Overwhich Falls to preserve the pure Westslope Cutthroat Trout populations in the West Fork Bitterroot River drainage upstream of Painted Rocks Dam. To accomplish this, we propose to use a piscicide (fish pesticide) called CFT Legumine, and possibly rotenone powder (inw A). Both of these products are registered with the Environmental Protection Agency specifically for this use. We expect to conduct the piscicide application in 2017 and again in 2018. No fish would be re-stocked above Overwhich Falls after the removal is complete unless we cannot successfully remove all of the fish above the falls. In that case, we may stock pure strain Westslope Cutthroat Trout from nearby streams to "swamp" (skew the gene pool toward Westslope Cutthroat Trout alleles) the remaining Yellowstone Cutthroat Trout that manage to survive the picsicide treatment upstream of the falls.

Rotenone is a naturally occurring substance derived from the roots of tropical plants in the bean family such as the jewel vine (*Derris* spp.) and lacepod (*Lonchocarpus* spp.) that are found in Australia, Oceania, southern Asia, and South America. Rotenone has been used by native people for centuries to capture fish for food in areas where these plants are naturally found. It has been used in fisheries management in North America since the 1930s. Rotenone has also been used as a natural insecticide for gardening and to control parasites such as lice on domestic livestock (Ling 2002). FWP has a long history of using rotenone to manage fish populations in Montana that spans as far back as 1948. The department has administered rotenone projects for a variety of reasons, but principally to improve angling quality or for native fish conservation.

Rotenone acts by inhibiting oxygen transfer at the cellular level. It is especially effective at low concentrations with fish because it is readily absorbed into the bloodstream through the thin cell layer of the gills. Mammals, birds and other non-gill breathing organisms do not have this rapid absorption route into the bloodstream, and thus can tolerate exposure to concentrations much higher than those used to kill fish.

The treatment area is Overwhich Creek and all tributaries above Overwhich Falls. The distance of stream treated is expected to be between 8 and 10 miles. These waters would be treated with CFT Legumine rotenone (5% a.i., Appendix A), which would be contained within the project boundaries. We would follow the label recommendations for concentrations for "normal use". On-site assays using caged fish would determine the appropriate concentrations needed, which is estimated to be near 1.0 mg of Legumine per 1 liter of water (1 part per million (ppm)). These assays would also determine the spacing between the stations along the stream course so that we have adequate overlap of rotenone so there are no 'under-treated' sections. During treatment, sentinel fish in flow through containers are placed periodically along the stream, but no less frequently than immediately upstream of each drip station (Figure 6). Sentinel fish are used as a double check on the assay results to determine if the treatment is proceeding as expected, or if for some reason there is inadequate rotenone coverage in a given area. If a particular section is found to be under-treated, an intermediate station is set up to cover that area.

FIGURE 6. A drip station and sentinel fish bag being used during a native fish restoration project, streamflow from upper right to lower left of photo. The sentinel fish bag is upstream of the piscicide application point to monitor the effectiveness of the drip station located upstream of the one shown here.

Numerous projects in other parts of Montana have typically used no more than 1.0 ppm Legumine to successfully eradicate non-native trout species during native fish conservation projects.

We may also apply powdered rotenone (7% a.i., Appendix A) to any seeps or springs if any are found in the project area. Typically we mix equal parts, in weight, of powdered rotenone and sand along with 0.125 parts of dry gelatin (e.g. 1 lb rotenone powder:1 lb sand:2 oz gelatin). Water is then added to this dry mixture on-site at the stream to create dough that is applied to springs and seeps at a rate of 1.2 lbs. dry mix for a 4-hour treatment of 1 cfs water. This accomplishes two things – it prevents the fish from finding fresh water refuges in the springs and seeps, and it prevents untreated water sources from diluting the rotenone in the stream.

Drip stations (Figures 6 & 7) would be used to dispense the rotenone in the stream. A drip station is a container that dispenses a measured amount of liquid rotenone to a stream at a constant rate for a specific period of time, based on the streamflow at that site.

FIGURE 7. Close-up view of the drip station trickling piscicide/stream water mixture into the stream during a native fish restoration project.

We would apply rotenone to off-channel waters and possibly backwaters of the stream with backpack sprayers or dough. Typically, 10 - 15 ml of CFT Legumine, green dye and stream water are mixed into a 3-gallon backpack sprayer for dispensing into these areas. The green dye serves as an indicator that a specific water, such as an off-stream pool, has been treated and would prevent double treatment by another spray crew.

The duration of the rotenone application would be an estimated four hours to remove fish from the stream. When the application ends, freshwater would begin to dilute the rotenone in the stream and also flush it through the system.

There are three ways in which rotenone can be detoxified: natural oxidation, dilution by freshwater and introduction of a neutralizing agent such as potassium permanganate. Oxidation and dilution are natural detoxifying methods, but we would also apply potassium permanganate to expedite detoxification so it occurs within a shorter distance below Overwhich Falls. Typically rotenone would persist for up to two hours, possibly longer, below the waterfall, but by applying a measured amount of potassium permanganate at the waterfall we can shorten that detoxification time to 30 minutes or less (see section 2a).

Potassium permanganate would be applied to the stream at an appropriate concentration to compensate for organic demand of the stream so that enough remains to neutralize the rotenone.
Caged sentinel fish would be used to measure the toxicity of the water in the stream to ensure the objectives have been met. After the application, we would use caged sentinel fish in the treatment area to evaluate when the waters are no longer toxic to fish. The label states that if sentinel fish in treated stream water show no signs of distress within 4 hours, the stream water is considered no longer toxic, and detoxification can be discontinued.

Dead fish would be left to decay on-site in the water. We do not anticipate there are enough fish in the project area to create any sort of attractant for scavengers, such as bears. Also, it is unlikely that any people other than project personnel would be in the area on the day of the treatment due to the remoteness of the site. The Bitterroot National Forest would close the trails that access the project area on the day(s) that the toxicant is applied.

We plan to conduct the rotenone applications for two consecutive years - the initial treatment would occur in August 2017 and then a follow-up treatment would occur in summer 2018. Experience has shown that in the case of spring spawning fish species such as cutthroat trout whose fry emerge in the summer and are very small at the time of treatment, the fry are able to more easily survive the toxicant because they live near the edges of the stream where the rotenone may not mix as well. Surviving fry grow to adequate size over the following year so that they are larger and more vulnerable to the second application of rotenone. Additionally, a few yearling and young adults may survive the initial application and could possibly spawn the following spring. The second application of rotenone would likely eliminate all of the year one survivors.

The goal of the project is to remove all of the fish upstream of Overwhich Falls. We plan on treating the reach in 2017 and again in 2018 to ensure a high probability of success. Most likely, the 2018 treatment would result in killing the remaining fish that survived the 2017 treatment. Ideally, only two years of treatment would be needed. If fish are observed in the stream after the 2018 treatment a third treatment could be necessary. At that time, we would re-evaluate whether to continue treatments. When appropriate, we would collect eDNA to assess whether all of the fish have been removed.

We do not plan to restock fish in Overwhich Creek upstream of Overwhich Falls. It would remain a refugia for Tailed Frogs and be available for introductions of fish should it be needed in the future. However, if we detect fish upstream of Overwhich Falls after we have ended treatments, we may restock Westslope Cutthroat Trout to “swamp” the few remaining Yellowstone Cutthroat Trout. In this case, we would stock genetically pure Westslope Cutthroat Trout from nearby streams.

PART II. ENVIRONMENTAL REVIEW

A. PHYSICAL ENVIRONMENT

1. LAND RESOURCES Will the proposed action result in:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Soil instability or changes in geologic substructure?		X				
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil which would reduce productivity or fertility?		X				
c. Destruction, covering or modification of any unique geologic or physical features?		X				
d. Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?		X				
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				

2. WATER Will the proposed action result in:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Discharge into surface water or any alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity?			X		YES	2a
b. Changes in drainage patterns or the rate and amount of surface runoff?		X				
c. Alteration of the course or magnitude of flood water or other flows?		X				
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water related hazards such as flooding?		X				
f. Changes in the quality of groundwater?		X				2f
g. Changes in the quantity of groundwater?		X				
h. Increase in risk of contamination of surface or groundwater?			X		YES	see 2a, f
i. Effects on any existing water right or reservation?		X				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?		X				See 2j
k. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
l. Will the project affect a designated floodplain?		X				
m. Will the project result in any discharge that will affect federal or state water quality regulations? (Also see 2a)			X		YES	2m

Comment 2a
The proposed project is designed to intentionally introduce a pesticide to surface water to remove unwanted fish. The impacts would be short term and minor. CFT Legumine liquid rotenone and rotenone powder are EPA registered pesticides and are safe to use for removal of unwanted fish, when handled properly. The concentration of CFT Legumine 5% liquid is not expected to exceed 1 ppm of streamflow, but could be adjusted within the label allowed limits based upon the results of on-site assays. The amount of rotenone powder, if necessary, was previously described to be 1.2 lbs of the 50:50 powder/sand mix per cfs (so 0.6 lbs of rotenone powder) so if any seeps and springs are found in the project area we anticipate we would use less than 5 lbs of rotenone powder.

There are three ways in which rotenone can be detoxified once applied. Rotenone is a compound that is susceptible to natural breakdown (detoxification) through a variety of mechanisms such as water chemistry, water temperature, exposure to organic substances, exposure to air, and sunlight intensity (Ware 2002; ODFW 2002; Loeb and Engstrom-Heg 1970; Engstrom-Heg 1972; Gilderhus et al. 1986). Rotenone persistence studies by Gilderhus et al. (1986) and Dawson et al. (1991) found that in cool water temperatures of 32 to 46° F, the half-life ranged from 3.5 to 5.2 days. Gilderhus et al. (1986) reported that 30% mortality was experienced in rainbow trout exposed to degrading concentrations of actual rotenone (0.004 ppm) in 46° F pond water 14 days after a treatment. By day 18 the concentrations were sub lethal to trout. The second method for detoxification involves basic dilution by fresh water. This may be accomplished by fresh ground water or surface water flowing into a lake or stream. While both of these breakdown methods occur naturally and thus necessitate application of rotenone at multiple points within the project area, we expect the stream to detoxify within 48 hours after the drip stations are removed. The final method of detoxification involves the application of an oxidizing agent like potassium permanganate. This dry crystalline substance is mixed with stream or lake water to produce a concentration of liquid sufficient to detoxify the rotenone. Detoxification is accomplished after about 15-30 minutes of exposure time between the two compounds (Prentiss Inc. 1998, 2007). To prevent rotenone from killing fish beyond the project area, we would apply potassium permanganate about 1000 feet upstream of the waterfall. Experience on other rotenone projects has shown that rotenone is typically neutralized within 30 minutes of contact time with potassium permanganate. Sentinel fish would be posted every 30 minutes of stream flow time below the detoxification station for a distance of at least 2 hours to monitor the effectiveness of the neutralization. Additionally, a colorimeter would be used to measure the concentration of potassium permanganate at 30 minutes below the detoxification station. If potassium permanganate can be measured at the 30-minute site, it indicates the natural stream demand is being met and the rotenone is being neutralized. Our target concentration of potassium permanganate at the 30-minute site is 0.5 – 1.0 ppm.

Dead fish would be left on-site in the water. We do not anticipate there are enough fish in the project area to create any sort of attractant for scavengers, such as bears. Also, it is unlikely that any people other than project personnel would be in the area on the day of the treatment due to the remoteness of the site, and the fact that the trails that access the area would be officially closed to the public. Carcasses would be expected to decay or be scavenged within a few days.

Comment 2f
Rotenone binds readily to sediments, and is degraded by soil and in water (Skaar 2001; Engstrom-Heg 1971, 1976; Ware 2002). Rotenone moves only one inch in most soil types; the only exception would be sandy soils where movement is about three inches (Hisata 2002). In California, studies where wells were placed in aquifers adjacent to and downstream of rotenone applications have never detected rotenone, rotenolone, or any of the other organic compounds in the formulated products (CDFG 1994). Case studies in Montana have concluded that rotenone movement through groundwater does not occur. For example, at Tetrault Lake, Montana neither rotenone nor inert ingredients were detected in a nearby domestic well,

which was sampled two and four weeks after applying 90 ppb rotenone to the lake. This well was chosen because it was down gradient from the lake and also drew water from the same aquifer that fed and drained the lake. In 1998, a Kalispell-area pond was treated with Prenfish 5% rotenone. Water from a well, located 65 feet from the pond, was analyzed and no sign of rotenone was detected. In 2001, another Kalispell-area pond was treated with Prenfish 5% rotenone. Water from a well located 200 feet from that pond was tested four times over a 21-day period and showed no sign of contamination. In 2005, FWP treated a small pond near Thompson Falls with Prenfish to remove pumpkinseeds and bass. A well, located 30 yards from the pond was tested and neither Prenfish nor inert ingredients were found in the well.

There are no domestic or stock water wells in the project area. The nearest domestic or stockwater wells are about 14 miles below the waterfall.

The inert ingredients in CFT Legumine volatilize rapidly in the environment and therefore do not pose a threat to the environment at the levels proposed for fish eradication.

Comment 2j
There are no irrigation or potable water withdrawals within 14 miles of the project area, and the rotenone would be fully neutralized within one mile of the waterfall. The Ravalli County Water Resources Survey does not identify any irrigation ditches taking water out of Overwhich Creek (DNRC 1958).

Comment 2m
The authority for FWP to apply piscicides is provided by the 2016 Pesticide General Permit issued on a five-year cycle by the Montana DEQ. FWP (and any other piscicide applicator) must develop a Pesticide Discharge Management Plan as a condition for coverage by this permit. For FWP, the Plan consists of procedures and protocols developed by and detailed in FWPs Piscicide Policy, the AFS Rotenone Standard Operating Procedures manual, and annual training and critique of projects provided by the FWP Piscicide Committee.

In the case of U.S. Forest Service lands, USFS policy makes it clear that state piscicide projects on federal lands are a state action, not a federal action, which should obviate the need for Special Use Permits. The one exception to this is pesticide use in Wilderness Areas, where permits may be necessary.

3. AIR **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Emission of air pollutants or deterioration of ambient air quality? (also see 13 (c))		X				
b. Creation of objectionable odors?			X		yes	3b
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. Will the project result in any discharge which will conflict with federal or state air quality regs?		X				

Comment 3b
CFT Legumine does not contain the same level of aromatic petroleum solvents (toluene, xylene, benzene and naphthalene) of other rotenone formulations and as a consequence does not have the same odor concerns and has less inhalation risks.

Dead fish would result from this project and may cause objectionable odors. This condition is greatly reduced during late summer or fall applications. We would expect odors from dead fish to be short term and minor. Dead fish would be left on-site in the water, which would eliminate or diminish their odor. We do not anticipate there are enough fish in the project area to create any sort of attractant for scavengers, such as bears. The Bitterroot National Forest is planning to close the area to public access on the days rotenone is being applied, thus eliminating the public from exposure to foul odors. Carcasses would be expected to decay or scavenged within a few days.

4. VEGETATION **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Changes in the diversity, productivity or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?			X			4a
b. Alteration of a plant community?		X				
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				4c
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?		X				
f. Will the project affect wetlands, or prime and unique farmland?		X				

Comment 4a
A minor amount of trampling of vegetation may occur due to overnight camping and people applying the piscicide.

Comment 4c
An evaluation of threatened species, endangered species, sensitive species, plant species of concern, and Forest plant species of interest were evaluated for the Upper Overwhich Creek Fish Removal Project in order to determine species of rare plants most likely to be affected by the proposed activities.

The proposed activity has little to no ground disturbance. Because the activities associated with this project are localized in nature, and all activities would not affect rare plants, the potential for residual effects to rare plant species or their habitat is low. The proposed project is not likely to adversely impact individual rare plant populations, since none are known to occur in the immediate area.

5. FISH/WILDLIFE Will the proposed action result in:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Deterioration of critical fish or wildlife habitat?		X				
b. Changes in the diversity or abundance of game animals or bird species?			X		yes	5b
c. Changes in the diversity or abundance of nongame species?			X		yes	5c
d. Introduction of new species into an area?		X				
e. Creation of a barrier to the migration or movement of animals?		X				
f. Adverse effects on any unique, rare, threatened, or endangered species?	X					5f
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest or other human activity)?		X				
h. Will the project be performed in any area in which T&E species are present, and will the project affect any T&E species or their habitat? (Also see 5f)		X				
i. Will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d)		X				

Comment 5b
This project is designed to eradicate hybrids of a non-native trout species from a portion of a drainage containing all native trout. The origin of the non-native trout that have hybridized with the natives is unknown. The area where these trout would be eradicated was historically fishless, so their removal would return that portion of the drainage to its original condition. The large majority of fish in the project reach are between 1 and 8 inches long, with a smaller number of fish longer than 8 inches. One fish over 12 inches was observed.

Comment 5c
Non-game (non-target) species that may be impacted include some aquatic insects, larval Western Toads, Tailed Frogs and possibly other larval amphibians. The rotenone may be toxic to the larval forms of amphibians, depending on their stage of development (Billman 2010). These species would be expected to recolonize the streams within a year or two.

Mammals, birds and reptiles such as Mink, River Otter, Black Bear, American Dipper, Belted Kingfisher and Garter Snakes that use aquatic invertebrates or fish for food could be displaced temporarily or permanently by this project. Recolonization by aquatic invertebrates and Tailed Frogs would be fairly rapid. However, the species that are significantly dependent upon fish would lose their source of food. Fish would remain abundant downstream of Overwhich Falls.

A review of the Montana Natural Heritage Program (MNHP) website for Threatened or Endangered species and Species of Concern identified no benthic macroinvertebrate (BMI) concerns. Project personnel must conduct both pre- and post-treatment sampling to quantify impacts to BMI, with the sampling protocol and intensity being dependent on the presence of species of concern and/or the

controversy of the project. If during the initial review of the MNHP list, a BMI species with a state ranking S1 (*at high risk because of extremely limited and/or rapidly declining population numbers, range and/or habitat, making it highly vulnerable to global extinction or extirpation in the state*) or S2 (*At risk because of very limited and/or potentially declining population numbers, range and/or habitat, making it vulnerable to global extinction or extirpation in the state*) has been observed within the drainage targeted for piscicide treatment, Species of Concern appropriate field sampling would be conducted, and BMI samples would be collected. Results would be included in the EA. If an S1 or S2 species that is not a BMI was previously identified from the MNHP list in the proposed treatment drainage, and is found during the information gathering phase (EA), consultation with a MNHP representative is required to evaluate risk or develop a mitigation plan suitable for the Species of Concern.

Numerous studies indicate that rotenone has temporary or minimal effects on aquatic insects and plankton. Anderson (1970) reported that comparisons between samples of zooplankton taken before and after a rotenone treatment did not change a great deal. Despite the inherent natural fluctuations in zooplankton communities, the application of rotenone had little effect on the zooplankton community. Cook and Moore (1969) reported that the application of rotenone has little lasting effect on the non-target insect community of a stream. Kiser et al. (1963) reported that 20 of 22 zooplankton species re-established themselves to pre-treatment levels within about 4 months of a rotenone application. Cushing and Olive (1956) reported that the insects in a lake treated with rotenone exhibited only short-lived effects. Hughey (1975) concluded that three Missouri ponds treated with rotenone showed little short term and no long-term effect on population levels of zooplankton. The effects of rotenone on plankton were consistent with the natural variability that is characteristic of plankton populations, and re-colonization was rapid and reached near pre-treatment levels within eight months.

Dolmen et al (1995) exposed the freshwater pearl mussel of Europe (Margaritifera margaritifera) to rotenone in field experiments and concluded that treatments less than 8 hours in duration and less than 5 ppm formulation would not represent a threat to their populations. The closely related pearlshell mussel (Margaritifera falcata) resides in Montana waters, and lives as close as…. To the Overwhich project. Even so, if their sensitivity to rotenone is similar to their European congener, then impacts to their populations are not be expected as a result of this treatment.

Skorupski (2011) completed a Masters Thesis entitled "Effects of CFT Legumine™ Rotenone on Macroinvertebrates in Four Drainages of Montana and New Mexico." His thesis had two general objectives: (1) demonstrate the influence CFT Legumine™ rotenone had on benthic macroinvertebrates for restoration projects in Montana and New Mexico and (2) evaluate the immediate response by means of invertebrate drift. Results indicated treatment effects were minimal for Specimen and Cherry Creek projects in Montana. New Mexico projects, Comanche and Costilla Creek suggest a greater influence. Potassium permanganate used to neutralize rotenone influenced communities in three of the four projects. Regardless, invertebrates in all four projects recovered one-year after treatment. Study of macroinvertebrate drift during rotenone treatment suggested a delayed response compared to previous literature. Rotenone appears to have the greatest immediate influence on the early life stages of Ephemeroptera and Plecoptera. Skorupski concluded to reduce impacts of rotenone to invertebrates, managers should apply CFT Legumine and use the minimal dosage and duration to complete the projects goal of removing non-indigenous fish species.

Schnee (2007) concluded that that rotenone's effects on non-target organisms such as plankton, amphibians, reptiles and aquatic insects were temporary and natural reproduction and/or recolonization by these species was sufficient to restore populations to pre-treatment densities within two years.

Chandler and Marking (1982) found that clams and snails were between 50 and 150 times more tolerant than fish to Noxfish (5% rotenone formulation), and Southern Leopard frog tadpoles were between 3 and

10 times more tolerant than fish. Grisak et al. (2007) conducted laboratory studies on longtoed salamanders *Ambystoma macrodactylum*, Rocky Mountain tailed frogs *Aschapus montanus*, and Columbia spotted frogs *Rana luteiventris* and concluded that the adults of these species would not suffer an acute response to Prenfish at trout killing concentrations (0.5-1 mg/L) but the larvae would likely be affected. These authors recommended implementing rotenone treatments at times when the larvae are not present, such as in the fall, to reduce the chance of exposure to rotenone treated water and potential impacts to larval amphibians.

Billman (2010) completed her thesis, "Investigating Effects of the Piscicide Rotenone on Amphibians in Southwestern Montana Through Laboratory Experiments and Field Trials", where she tested the effects of 1 ppm CFT Legimine rotenone formula (50 ppb or 50 µg/L rotenone a.i.) on various immature and mature stages of native amphibians (Columbia spotted frogs and Western Toads *Anaxyrus boreas*) in fishless wetlands near Cherry Creek, Montana and in High Lake, Yellowstone National Park (YNP). She conducted amphibian surveys immediately prior to and after the rotenone treatments to obtain tadpole population estimates. Follow-up surveys were conducted 1-year post treatment to estimate tadpole recovery. In YNP, additional surveys were conducted 2- and 3-years post application to observe longer-term effects of fish removal and the subsequent introduction of native fish. Within 24 h following application of rotenone at both locations, there was 100% mortality in gill-breathing tadpoles, but non-gill breathing metamorphs, juveniles, and adults were apparently unaffected. In the years following, tadpoles repopulated all waters and population levels were similar to, or, in the case of YNP because of concurrent fish removal, higher than pretreatment levels. At all four Cherry Creek wetlands one-year post treatment, tadpoles were again present at abundance levels similar to pre-treatment levels.

The project area is within the historic range of the Coeur d' Alene salamander. The habitat requirements for this species includes splash zones of alpine waterfalls above 4000 ft elevation. The Montana Natural Heritage program lists this species as a sensitive due to low abundance or limited information. No Coeur d' Alene salamanders have been observed or reported in the project area. Project personnel would survey for Coeur d" Alene salamanders before and after the project using standard protocols.

Birds required levels of rotenone at least 1,000 to 10,000-times greater than is required for lethality in fish (Skaar 2001). Cutkomp (1943) reported that chickens, pheasants and members of lower orders of *Galliformes* were quite resistant to rotenone, and four day old chicks were more resistant than adults. Ware (2002) reports that swine are uniquely sensitive to rotenone and it is slightly toxic to wildfowl, but to kill Japanese quail required 4500 to 7000 times more than is used to kill fish.

The EPA (2007) made the following conclusion for birds;

> Since rotenone is applied directly to water, there is little likelihood that terrestrial forage items for birds will contain rotenone residues from this use. While it is possible that some piscivorous birds may feed opportunistically on dead or dying fish located on the surface of treated waters, protocols for piscicidal use typically recommend that dead fish be collected and buried, rendering the fish less available for consumption (see Section IV). In addition, many of the dead fish will sink and not be available for consumption by birds. However, whole body residues in fish killed with rotenone ranged from 0.22 µg/g in yellow perch (Perca flavescens) to 1.08 µg/g in common carp (Cyprinus carpio) (Jarvinen and Ankley 1998). For a 68 g yellow perch and an 88 g carp, this represents totals of 15 µg and 95 µg rotenone per fish, respectively. Based on the avian subacute dietary LC_{50} of 4110 mg/kg, a 1000-g bird would have to consume 274,000 perch or 43,000 small carp. Thus, it is unlikely that piscivorous birds will consume enough fish to result in a lethal dose.

Restani and Donnelly (unpublished data, personal communication) examined the impacts of a multi-year rotenone treatment in Cherry Creek on water ouzels (American Dippers) *Cinclus mexicanus*. Dippers are obligate feeders on a narrow range of aquatic insects, primarily ephemeropterans, plecopterans and trichopterans (EPT), and small fish. They nest on features such as mid-stream and side stream boulders, erosional embankments and bridges. Restani and Donnelly examined a range of dipper characteristics, including adult body condition, productivity, clutch size, clutch survival and movement/fidelity to nesting sites. No impacts on productivity, clutch characteristics, movement/site fidelity or dipper survival were found, except that adult body condition dropped significantly the spring following a fall treatment, but rebounded to the pre-treatment level by the second or third spring after treatment. They could not detect a difference between pre- and post-treatment condition, but the latter was somewhat higher. This is likely explained by reduced competition for EPT prey due to the absence of fish in the stream, and may have been enhanced as the WCT population density increased and fish re-entered the dippers diet.

Mammals are generally not affected because they neutralize rotenone by enzymatic action in their stomach and intestines (AFS 2002). Laboratory tests by Marking (1988) fed forms of rotenone to rats and dogs as part of their diet for periods of six months to two years and observed effects such as diarrhea, decreased food consumption, and weight loss. He reported that despite unusually high treatment concentrations of rotenone in rats and dogs, it did not cause tumors or reproductive problems in mammals. Studies of risk for terrestrial animals found that a 22-pound dog would have to drink 7,915 gallons of treated lake water within 24 hours, or eat 660,000 pounds of rotenone-killed fish, to receive a lethal dose (CDFG 1994). The State of Washington reported that a half pound mammal would need to consume 12.5 mg of pure rotenone to receive a lethal dose (Bradbury 1986). Considering the only conceivable way an animal can consume the compound under field conditions is by drinking lake or stream water, a half-pound animal would need to drink 33 gallons of water treated at 2 ppm.

The EPA (2007) made the following conclusion for small mammals and large mammals;

> When estimating daily food intake, an intermediate-sized 350 g mammal will consume about 18.8 g of food. Using data previously cited from the common carp with a body weight of 88 grams, a small mammal would only consume 21% (18.8/88) of the total carp body mass. According to the data for common carp, total body residues of rotenone in carp amounted to 1.08 μg/g. A 350-g mammal consuming 18.8 grams represents an equivalent dose of 20.3 μg of rotenone; this value is well below the median lethal dose of rotenone (39.5 mg/kg * 0.350 kg = 13.8 mg = 13,800 μg) for similarly sized mammals.
>
> When assessing a large mammal, 1000 g is considered to be a default body weight. A 1000-g mammal will consume about 34 g of food. If the animal fed exclusively on carp killed by rotenone, the equivalent dose would be 34 g *1.08 μg/g or 37 μg of rotenone. This value is below the estimated median lethal equivalent concentration adjusted for body weight (30.4 mg/kg * 1 kg = 30.4 mg = 30,400 μg). Although fish are often collected and buried to the extent possible following a rotenone treatment, even if fish were available for consumption by mammals scavenging along the shoreline for dead or dying fish, it is unlikely that piscivorous mammals will consume enough fish to result in observable acute toxicity.

Mink are diet generalists, so if present in the project area would likely be able to shift their consumption to alternatives other than fish. A compilation of scientific studies called the Wild Furbearer Management and Conservation in North America, by the Ontario Ministry of Natural Resources (1987), includes studies conducted in Montana. In general, it concludes that mammals are the most important mink prey item throughout the year, followed by birds and invertebrates. Fish replace birds and invertebrates as the

second most important food item in the diet in winter. Mink tend to prey on more coarse, slow moving fish rather than faster midstream fish such as trout, indicating that trout are more likely to escape mink predation even if they are the only fish available.

It is important to note that many toxicity studies involve subjecting laboratory specimens to unusually high concentrations of rotenone, or conducting tests on animals that would not normally be exposed to rotenone during use in fisheries management.

Based on this information we would expect the impacts to non-target organisms to range from non-existent to short term and minor. Aquatic invertebrate samples would be taken before and the year after treatment to assess whether recovery has occurred.

Comment 5f
Bull Trout *Salvelinus confluentus*, a federally listed Threatened species, are known to reside in Overwhich Creek downstream of Overwhich Falls and all the way to the confluence with the West Fork Bitterroot River. Additionally, migratory Bull Trout may use Overwhich Creek for spawning.

Prior to initiating the piscicide treatment, we would electrofish Overwhich Creek to capture any Bull Trout present and transport them to a tributary or to a point in Overwhich Creek downstream well below the active neutralization zone. We would hold the fish in live cars until the neutralization station is shut down after the rotenone is fully neutralized. Additionally, we would install block nets across the tributary or Overwhich Creek so that if any Bull Trout escape the live cars they would not be able to move into the active neutralization zone.

While these efforts would save some Bull Trout from the toxicant, electrofishing in this size stream usually only captures 25-40% of the fish. Therefore, some fish below Overwhich Falls would be exposed to rotenone before it is fully detoxified/neutralized. To minimize the potential impact of rotenone on Bull Trout, we expect to locate the detoxification station about 10-minutes streamflow time above the waterfall. Typically, rotenone is fully neutralized within 30 minutes after exposure to potassium permanganate applied by the detoxification station, and in some cases neutralization has been significantly accomplished within 15 minutes. By locating the detoxification station 10 minutes above the waterfall, we expect to have detoxification well underway before going over the waterfall and impacting Bull Trout, but also expect to have adequate impact on the target cutthroat trout to cause them to become disoriented and lose equilibrium and be captured in a block net that would be set at the top of the waterfall and another a short distance below the waterfall. We would have crew on hand throughout the detoxification zone below the waterfall with buckets of fresh water to net out any affected Bull Trout they see and try to revive them. These Bull Trout would at some point be moved into and held in a nearby tributary or further downstream in Overwhich Creek out of the detoxification zone and eventually released after the detoxification station is shut down.

Because Bull Trout are present in the affected area below Overwhich Falls and the project would occur on Forest Service land, the Endangered Species Act requires that Section 7 consultation be completed between the Forest Service and the U.S. Fish & Wildlife Service to assess the potential impacts of the project on Bull Trout and Bull Trout critical habitat. Formal consultation was initiated on 4/17/2017, and the U.S. Fish & Wildlife Service has 135 days from that date to issue a Biological Opinion. The Biological Opinion is expected to be completed on or before 8/29/2017. If the formal consultation process identifies negative impacts to Bull Trout that cannot be sufficiently mitigated, the project may have to be modified, postponed or cancelled. Also, the Biological Opinion is likely to contain legally binding terms and conditions which must be applied during the project to minimize effects to Bull Trout.

After the first treatment, it is likely that we would learn more about how the placement of the detoxification station worked. Based on that information, we may move the station upstream or downstream during subsequent treatments, if appropriate.

Bald Eagles were federally de-listed on June 28, 2007, but we still consider them a sensitive species because they are one of the birds most likely to use rotenone killed fish. Bald Eagles or Osprey are unlikely to inhabit the project area, so no effect is expected.

The project area is within the range of the gray wolf, but wolves are not dependent on the stream or fish in the stream for food.

6. NOISE/ELECTRICAL EFFECTS **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Increases in existing noise levels?		X				
b. Exposure of people to serve or nuisance noise levels?		X				
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				

B. HUMAN ENVIRONMENT

7. LAND USE **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?		X				
b. Conflicted with a designated natural area or area of unusual scientific or educational importance?		X				
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?	X					7c
d. Adverse effects on or relocation of residences?		X				

Comment 7c
The CFT Label states: ” Do not allow recreational access (e.g., wading, swimming, boating, and fishing) within the treatment area while rotenone is being applied (see Placarding of Treatment Areas). Therefore during the application of the rotenone, the area being treated must be closed to public access. The amount of time it is closed would depend on the concentration used in your project and whether it is a stream or a lake, (see CFT Legumine label, Appendix A). If a stream or lake is treated at less than 1.8 ppm, then it can be reopened as soon as the chemical has been applied. If a stream is treated at a concentration greater than 1.8 ppm then the area must be closed a minimum of 72 hours. If a lake is treated at a concentration of greater than 1.8 ppm then access can be granted only after fish can survive a 24-hour bioassay in treated water or 14 days have passed since the application, whichever is less.

8. RISK/HEALTH HAZARDS Will the proposed action result in:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Risk of an explosion or release of hazardous substances (including, but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?			X		YES	8a
b. Affect an existing emergency response or emergency evacuation plan or create a need for a new plan?			X		YES	8b
c. Creation of any human health hazard or potential hazard?			X		YES	see 8a,c
d. Will any chemical toxicants be used?			X		YES	see 8a

Comment 8a
The principal risk of human exposure to hazardous materials from this project would be limited to the applicators. All applicators would wear safety equipment required by the product labels and MSDS sheets such as respirator, goggles, rubber boots, Tyvek overalls, and Nitrile gloves. All applicators would be trained on the safe handling and application of the piscicide. FWP requires that all piscicide projects be supervised by a pesticide applicator certified by the Montana Department of Agriculture, with a second certified applicator who is not affiliated with the project serving as an independent applicator, to review planning for the project and is on site for at least the first day of piscicide application to ensure adherence to label and FWP policy requirements. Materials would be transported, handled, applied and stored according to the label specifications to reduce the probability of human exposure or spill.

Comment 8b
FWP requires a treatment plan for rotenone projects. This plan addresses many aspects of safety for people who are on the implementation team such as establishing a clear chain of command, training, delegation and assignment of responsibility, clear lines of communication between members, spill contingency plan, first aid, emergency responder information, personal protective equipment, monitoring and quality control, among others. Implementing this project should not have any impact on existing emergency plans. Because an implementation plan has been developed by FWP the risk of emergency response is minimal and any affects to existing emergency responders would be short term and minor.

Comment 8c
The EPA (2007) conducted an analysis of the human health risks for rotenone and concluded it has a high acute toxicity for both oral and inhalation routes, but has a low acute toxicity for dermal route of exposure. It is not an eye or skin irritant nor a skin sensitizer. The EPA could not provide a quantitative assessment of potentially critical effect on neurotoxicity risks to rotenone users, so three uncertainty factors were assigned to the rating values. They are:

- 10x database uncertainty factor
- 10x inter-species uncertainty factor
- 10x intra-species uncertainty factor

These factors have been applied to protect against potential human health effects. The target margin of exposure (MOE) is 1000 (10 x 10 x 10). The following table summarizes the EPA toxicological endpoints of rotenone (from EPA 2007); Rotenolenoids are common degradation products found in the parent plant material used to make piscicidal forms of rotenone. The EPA (2007) concluded these degradation products are no more toxic than the active ingredient.

Exposure Scenario	Dose Used in Risk Assessment, Uncertainty Factor (UF)	Level of Concern for Risk Assessment	Study and Toxicological Effects
Acute Dietary (females 13-49)	NOAEL = 15 mg/kg/day UF = 1000 aRfD = 15 mg/kg/day = 0.015 mg/kg/day 1000	Acute PAD = 0.015 mg/kg/day	Developmental toxicity study in mouse (MRID 00141707, 00145049) LOAEL = 24 mg/kg/day based on increased resorptions
Acute Dietary (all populations)	An appropriate endpoint attributable to a single dose was not identified in the available studies, including the developmental toxicity studies.		
Chronic Dietary (all populations)	NOAEL = 0.375 mg/kg/day UF = 1000 cRfD = 0.375 mg/kg/day = 0.0004 mg/kg/day 1000	Chronic PAD = 0.0004 mg/kg/day	Chronic/oncogenicity study in rat (MRID 00156739, 41657101) LOAEL = 1.9 mg/kg/day based on decreased body weight and food consumption in both males and females
Incidental Oral Short-term (1-30 days) Intermediate-term (1-6 months)	NOAEL = 0.5 mg/kg/day	Residential MOE = 1000	Reproductive toxicity study in rat (MRID 00141408) LOAEL = 2.4/3.0 mg/kg/day [M/F] based on decreased parental (male and female) body weight and body weight gain
Dermal Short-, Intermediate-, and Long-Term	NOAEL = 0.5 mg/kg/day 10% dermal absorption factor	Residential MOE = 1000 Worker MOE = 1000	Reproductive toxicity study in rat (MRID 00141408) LOAEL = 2.4/3.0 mg/kg/day
Inhalation Short-term (1-30 days) Intermediate-term (1-6 months)	NOAEL = 0.5 mg/kg/day 100% inhalation absorption factor	Residential MOE = 1000 Worker MOE = 1000	[M/F] based on decreased parental (male and female) body weight and body weight gain
Cancer (oral, dermal, inhalation)	Classification; No evidence of carcinogenicity		

UF = uncertainty factor, NOAEL = no observed adverse effect level, LOAEL = lowest observed adverse effect level, aPAD = acute population adjusted dose, cPAD = chronic population adjusted does, RfD = reference dose, MOE = margin of exposure, NA = Not Applicable

The EPA analysis of acute dietary risk for both food and drinking water concluded;

> When rotenone is used in fish management applications, food exposure may occur when individuals catch and eat fish that either survived the treatment or were added to the

water body (restocked) prior to complete degradation. Although exposure from this route is unlikely for the general U.S. population, some people might consume fish following a rotenone application. EPA used maximum residue values from a bioaccumulation study to estimate acute risk from consuming fish from treated water bodies. This estimate is considered conservative because the bioaccumulation study measured total residues in edible portions of fish including certain non-edible portions (skin, scales, and fins) where concentrations may be higher than edible portions (tissue) and the Agency assumed that 100% of fish consumption could come from rotenone exposed fish. In addition, fish are able to detect rotenone's presence in water and, when possible, attempt to avoid the chemical by moving from the treatment area. Thus, for partial kill uses, surviving fish are likely those that have intentionally minimized exposure.

Acute exposure estimates for drinking water considered surface water only because rotenone is only applied directly to surface water and is not expected to reach groundwater. The estimated drinking water concentration (EDWC) used in dietary exposure estimates was 200 ppb, the solubility limit of rotenone. The drinking water risk assessment is conservative because it assumes water is consumed immediately after treatment with no degradation and no water treatment prior to consumption.

Acute dietary exposure estimates result in dietary risk below the Agency's level of concern. Generally, EPA is concerned when risk estimates exceed 100% of the acute population adjusted dose (aPAD). The exposure for the "females 13-49 years old" subgroup (0.1117 mg/kg/day) utilized 74% of the aPAD (0.015 mg/kg/day) at the 95^{th} percentile (see Table 5). It is appropriate to consider the 95^{th} percentile because the analysis is deterministic and unrefined. Measures implemented as a result of this RED will further minimize potential dietary exposure (see Section IV).

As for evaluating the human chronic risk from exposure to rotenone treated water, the EPA acknowledges the four principle reasons for concluding there is a low risk. First, the rapid natural degradation of rotenone. Second, using active detoxification measures by applicators such as potassium permanganate. Next, properly following piscicide labels which prohibit the use near water intakes. Finally, proper signing, public notification or area closures which limit public exposure to rotenone treated water.

As for recreational exposure, the EPA concludes no risk to adults who enter treated water following the application from/by dermal and incidental ingestion, but requires a waiting period of 3 days after a treatment before toddlers swim in treated water. The aggregate risk to human health from food, water and swimming does not exceed the EPA level of concern (EPA 2007).

Recreationists in the area would likely not be exposed to the treatments because a temporary closure would preclude many from being in the area. Proper warning through news releases, signing the project area, road closure and administrative personnel in the project area should be adequate to keep unintended recreationists from being exposed to any treated waters. Conducting the application in the late summer (in September more people are in the area due to bow hunting) would further reduce exposure due to the relatively low number of users in this area.

The occupational risks to humans are low if proper safety equipment and handling procedures are followed as directed by the product labels (EPA 2007). The major risks to human health from rotenone come from accidental exposure during handling and application. This is the only time when humans are exposed to concentrations that are greater than that needed to remove fish. To prevent accidental exposure to liquid formulated or powdered rotenone, the Montana Department of Agriculture requires applicators

be trained and certified to apply the pesticide in use, equipped with the proper personal protective equipment, which, includes respirator, eye protection, rubberized gloves, have product labels with them during use, contain piscicide materials only in approved containers that are properly labeled, and adhere to the product label requirements for storage, handling, and application.

Any threats to human health during application would be greatly reduced with proper use of personal protective equipment.

There is an inhalation risk to individuals using backpack sprayers to apply rotenone. To guard against this, these applicators would be equipped with protective clothing, eye, and particle-filtering respirators.

Fisher (2007) conducted an analysis of the inert constituent ingredients found in the rotenone formulation of CFT Legumine for the California Department of Fish and Game. These inert ingredients are principally found in the emulsifying agent Fennodefo[99] which helps make the generally insoluble rotenone more soluble in water. The constituents were considered because of their known hazard status and not because of their concentrations in the CFT Legumine formulation. Solvents such as xylene, trichloroethylene (TCE) and tetrachloroethylene are residue left over from the process of extracting rotenone from the root and can be found in some lots of Legumine. However, inconsistent detectability and low occurrence in other formulations that used the same extraction process were below the levels for human health and ecological risk. Solvents such as toluene, *n*-butylbenzene, 1,2,4 trimethylbenzene and naphthalene are present in CFT Legumine, and when used in other applications can be an inhalation risk. However, because of their low concentrations in this formulation, the human health risk is low. The remaining constituents, the fatty acid esters, resin acids, glycols, substituted benzenes, and *1*-hexanol were likewise present but either analyzed, calculated or estimated to be below the human health risk levels when used in a typical fish eradication project.

Methyl pyrrolidone is also found in CFT Legumine. It is known to have good solvency properties and is used to dissolve a wide range of compounds including resins (rotenone). Analysis of Methyl pyrrolidone in CFT Legumine showed it represents about 9% of the formulation (Fisher 2007). The analysis concluded regarding the constituent ingredients in CFT Legumine:

> . . . None of the constituents identified are considered persistent in the environment nor will they bio accumulate. The trace benzenes identified in the solvent mixture of CFT Legumine™ will exhibit limited volatility and will rapidly degrade through photolytic and biological degradation mechanisms. The PEGs are highly soluble, have very low volatility, and are rapidly biodegraded within a matter of days. The fatty acids in the fatty acid ester mixture (Fennodefo99™) do not exhibit significant volatility, are virtually insoluble, and are readily biodegraded, although likely over a slightly longer period of time than the PEGs in the mixture. None of the new compounds identified exhibit persistence or are known to bio accumulate. Under conditions that would favor groundwater exchange the highly soluble PEGs could feasibly transmit to groundwater, but the concentrations in the reservoir, and the rapid biodegradation of these constituents makes this scenario extremely unlikely. Based upon a review of the physical chemistry of the chemicals identified, we conclude that they are rapidly biodegraded, hydrolyzed and/or otherwise photolytically oxidized and that the chemicals pose no additional risk to human health or ecological receptors from those identified in the earlier analysis. None of the constituents identified appear to be at concentrations that suggest human health risks through water, or ingestion exposure scenarios and no relevant regulatory criteria are exceeded in estimated exposure concentrations…

The CFT Legumine MSDS states "…when working with an undiluted product in a confined space, use a non-powered air purifying respirator…and… air-purifying respirators do not protect workers in oxygen-deficient atmospheres…" It is not likely that workers would be handling CFT Legumine in an oxygen deficient space during normal use. However, to guard against this, proper ventilation and safety equipment would be used according to the label requirements.

The advantage of CFT Legumine over Prenfish is that it has less petroleum hydrocarbon solvents such as toluene, xylene, benzene and naphthalene. By comparison, Prenfish has a strong chemical odor that fish can detect, allowing them to avoid the rotenone. CFT Legumine is virtually odor-free and performs almost identically to Prenfish.

In their description of how South American Indians prepare and apply *Timbó*, a rotenone parent plant, Teixeira et al. (1984) reported that the Indians extensively handled the plants during a mastication (chewing) process, and then swam in lagoons to distribute the plant pulp. No harmful effects were reported. It is important to note that the primitive method of applying rotenone from root does not involve a calculated target concentration, metering devices or involve human health risk precautions as those involved with fisheries management programs.

One study, in which laboratory rats were continuously injected with rotenone in their jugular vein for a period of five weeks, reported finding brain lesions characteristic of Parkinson's Disease (Betarbet et al. 2000). However, the authors did not conclude that rotenone caused Parkinson's Disease. The relevance of these results to the use of rotenone as a piscicide have been challenged based upon the following dissimilarities between the experimental methodology used and fisheries related applications: the continuous intravenous injection method used to treat the rats leads to "continuously high levels of the compound in the blood," unlike fisheries applications where a much lower dose is used and potential exposure to rotenone is limited to usually only a matter of hours or days because of the rapid breakdown of the rotenone following application. Further, dimethyl sulfoxide (DMSO) was used to enhance tissue penetration in the laboratory experiment (normal routes of exposure actually slow introduction of chemicals into the bloodstream), no such chemicals enhancing tissue penetration are present in the rotenone formulation proposed for use in this treatment.

Similar studies (Marking 1988) have found no Parkinson-like results. Extensive research has demonstrated that rotenone does not cause birth defects (HRI 1982), gene mutations (Van Geothem et al. 1981; BRL 1982) or cancer (Marking 1988). Rats that were fed high concentrations of rotenone exhibited no fetal development abnormalities. Spencer and Sing (1982) reported that rats that were fed diets laced with 10-1,000 ppm rotenone over a 10-day period did not suffer any reproductive dysfunction. Typical concentrations of actual rotenone used in fishery management range from 0.025 to 0.050 ppm (25 to 50 ppb) and are far below that administered during most toxicology studies.

Another study linked the use of rotenone and paraquat with the development of Parkinson's Disease (PD) in humans later in life (Tanner et al. 2011). The after-the-fact study included mostly farmers from 2 states within the United States who presumably used rotenone for terrestrial application to crops and/or livestock. The results of epidemiological studies of pesticide exposure, such as this one, have been highly variable (Gunther and Schaefer 2011). Studies have found no correlations between pesticide exposure and PD (e.g., Jiménez-Jiménez 1992; Hertzman 1994; Engel et al. 2001; Firestone et al. 2010), some have found correlations between pesticide exposure and PD (e.g., Hubble et al. 1993; Lai et al. 2002; Tanner et al. 2011) and some have found it difficult determine which pesticide or pesticide class is implicated if associations with PD occur (e.g., Engel et al. 2001; Tanner et al. 2009). Recently, epidemiological studies linking pesticide exposure to PD have been criticized due to the high variation among study results, generic categorization of pesticide exposure scenarios, questionnaire subjectivity, and the difficulty in evaluating the causal factors in the complex disease of PD, which may have multiple causal factors (age,

genetics, environment) (Raffaele et al. 2011). A specific concern is the inability to assess the degree of exposure to certain chemicals, including rotenone, particularly the concentration of the chemical, frequency of use, application (e.g., agricultural, insect removal from pets), and exposure routes (Raffaele et al. 2011). No information is given in the Tanner et al. (2011) study about the formulation of rotenone used (powder or liquid) or the frequency or dose farmers were exposed to during their careers. There is also no information given about the personal protective equipment used or any information about other pesticides farmers were exposed to during the period of the study. Without information on how much rotenone individuals were exposed to and for how long, it is difficult to evaluate the potential risk to humans of developing Parkinson's disease from aquatic applications of rotenone products.

In 2011, the State of Arizona convened the Rotenone Review Advisory Committee, (http://www.azgfd.gov/h_f/rotenone.shtml) a 'blue ribbon committee' of diverse interests that extensively studied rotenone and the Arizona Game and Fish Department's use of rotenone for fish management projects. The committee, including interests initially opposed to rotenone use due to environmental and human health concerns, unanimously concluded "that rotenone is an important fisheries management tool that can be used safely and effectively" and affirmed the Arizona Game and Fish position that rotenone is an important fisheries management tool. They further concluded, "To date, there are no published studies that conclusively link exposure to rotenone and the development of clinically diagnosed PD. Some correlation studies have found a higher incidence of PD with exposure to pesticides among other factors, and some have not. It is very important to note that in case-control correlation studies, causal relationships cannot be assumed and some associations identified in odds-ratio analyses may be chance associations. Only one study (Tanner et al. 2011) found an association between rotenone and paraquat use and PD in agricultural workers, primarily farmers. However, there are substantial differences between the methods of application, formulation, and doses of rotenone used in agriculture and residential settings compared with aquatic use as a piscicide, and the agricultural workers interviewed were also exposed to many other pesticides during their careers. Through the EPA reregistration process of rotenone, occupational exposure risk is minimized by new requirements that state handlers may only apply rotenone at less than the maximum treatment concentrations (200 ppb), the development of engineering controls to some of the rotenone dispensing equipment, and requiring handlers to wear specific PPE" (Gunther and Schaefer. 2011). Participating members of the committee included representatives from the Arizona Department of Environmental Quality, Arizona Department of Health Services, Arizona Department of Water Resources, Arizona Department of Agriculture, Arizona Game and Fish Department, Arizona House of Representatives, Arizona Senate, Arizona State University, Central Arizona Project, City of Phoenix, Salt River Project, U.S. Environmental Protection Agency, U.S. Forest Service, U.S. Fish and Wildlife Service, Bureau of Land Management, Arizona Farm Bureau, Arizona Wildlife Federation, Trout Unlimited, R and R Partners, Shuler Law Firm, Town of Patagonia, and the Institute for Environmental Conflict Resolution.

To reduce or eliminate the risk to human health, public exposure to rotenone treated water must be eliminated to the extent possible. To reduce the potential for exposure of the public during the proposed use of CFT Legumine, areas treated with rotenone would be closed to public access during the treatment. Signs would be placed at access points informing the public of the closure and the presence rotenone treated waters. Personnel would be onsite to inform the public and escort them from the treatment area should they enter. Rotenone treated waters would be contained to the proposed treatment areas by adding potassium permanganate to the stream upstream of Overwhich Falls. Potassium permanganate would neutralize and detoxify any remaining rotenone within a short distance below the falls. The efficacy of the detoxification would be monitored using fish (the most sensitive species to the chemical) and a handheld colorimeter. Therefore, the potential for public exposure to rotenone treated waters is very minimal. The potential for exposure would be greatest for those workers applying the chemical. To reduce their exposure, all CFT Legumine label mandates for personal protective equipment would be adhered to (see Comment 8a).

9. COMMUNITY IMPACT **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?		X				
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		X				

10. PUBLIC SERVICES/TAXES/UTILITIES **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Will the proposed action have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify: _____		X				
b. Will the proposed action have an effect upon the local or state tax base and revenues?		X				
c. Will the proposed action result in a need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				
d. Will the proposed action result in increased used of any energy source?		X				
e. Define projected revenue sources		X				
f. Define projected maintenance costs		X				

11. AESTHETICS/RECREATION Will the proposed action result in:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?		X				
b. Alteration of the aesthetic character of a community or neighborhood?		X				
c. Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach Tourism Report)			X			11c
d. Will any designated or proposed wild or scenic rivers, trails or wilderness areas be impacted? (Also see 11a, 11c)		X				

Comment 11c

The goal of the project is to remove fish from the portion of Overwhich Creek upstream of Overwhich Falls. We do not plan to restock fish. The site is very remote and the fish in this reach of stream are small, however, some angling may occur. So a small amount of angling opportunity may be lost due to the project.

12. CULTURAL/HISTORICAL RESOURCES Will the proposed action result in:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Destruction or alteration of any site, structure or object of prehistoric historic, or paleontological importance?		X				
b. Physical change that would affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?		X				12c
d. Will the project affect historic or cultural resources?		X				

Comment 12c

The project site is located within the aboriginal range of the Confederated Salish and Kootenai Tribes of the Flathead Nation (CSKT). Fisheries personnel with the Tribe were contacted about the project. They would discuss the project with the Tribe, and this EA would be sent to them for comment. Consultation with both the Fisheries and the Cultural Preservation Program of the CSKT is ongoing. Since there are no proposed ground-disturbing activities associated with the project, it is considered to have little or no potential to adversely affect historic properties. Under the Programmatic Agreement (PA) between the USFS and Montana State Historic Preservation Office and 36 CFR 800.3(a)(1), no consultation is necessary for projects which have little or no potential to cause adverse effects. A specialist report documenting this finding is included in the project planning files. The Bitterroot National Forest Heritage Program manager coordinated with Fish, Wildlife and Parks during the planning phases of the project.

13. SUMMARY EVALUATION OF SIGNIFICANCE Will the proposed action, considered as a whole:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources which create a significant effect when considered together or in total.)		X				
b. Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?		X				
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?	X	X			yes	13e
f. Is the project expected to have organized opposition or generate substantial public controversy? (Also see 13e)	X	X				13f
g. List any federal or state permits required.						13g

Comments 13 e and f
The use of pesticides can generate controversy from some people. Public outreach and information programs can educate the public on the use of pesticides. It is not known if this project would have organized opposition. FWP met with the Board of the Bitterroot Chapter of Trout Unlimited and attended general meetings of the Ravalli County Fish and Wildlife Association and Fly Fishers of the Bitterroot to discuss the project. The Ravalli County Commissioners were also contacted about the project.

Comment 13g
The authority for FWP to apply piscicides is provided by the 2016 Pesticide General Permit issued on a 5-year cycle by Montana DEQ. National Forest policy states: …although federal regulations at 36 CFR 261.9(f) require that Special Use Authorization be obtained for any use of pesticides that affect Forest Service lands, most applications by State agencies would generally meet the criteria for a waiver from the permits as set forth in 36 CFR 251.50(e)(1) & (2). The one major exception to this is the use of pesticides in Wilderness Areas, where it would be necessary to obtain a Pesticide Use Permit and the Minimum Requirement Decision Guide (MRDG), which are issued by the Regional Forester. Because of this federal nexus, there are accompanying requirements to ensure NEPA compliance as part of the permitting process.

To this end, FWP has consulted with the Bitterroot National Forest, and they have confirmed that no permits are necessary from them to conduct the proposed project. The West Fork Ranger District would

complete a Decision Notice which documents the Forest Service's authorization for FWP to conduct the proposed project.

PART III. ALTERNATIVES

Alternative 1 – No Action
The no action alternative would allow the status quo management to continue which would maintain the present angling quality and species diversity in Upper Overwhich Creek. This would not meet the objectives of the project which is to remove non-native Yellowstone Cutthroat Trout from the drainage. Yellowstone Cutthroat would remain in Overwhich Creek and continue to be a potential source of introgression of native Westslope Cutthroat Trout.

Alternative 2 – Rotenone removal (Proposed Action)
The proposed action involves removing Westslope/Yellowstone Cutthroat from Overwhich Creek, upstream of the Overwhich Falls but not re-stocking fish. This would return the stream to its natural condition when fish were unlikely to have been in this reach.

Alternative 3 – Rotenone Removal and restocking of Westslope Cutthroat Trout.
This action would accomplish the removal of non-native fish from this reach but would re- introduce a fish that, while native to Lower Overwhich Creek, is unlikely to be native upstream of Overwhich Falls. Fish do impact other aquatic species in the stream.

Alternative 4 - Mechanical removal by electrofishing.
Electrofishing has been used to remove unwanted fish from streams with limited success.

Numerous attempts have been made to remove unwanted fish using electrofishing, and this has occurred mostly in streams. FWP conducted an electrofishing removal of brook trout from 6 km of stream above a barrier on Muskrat Creek (Shepard et al. 2001). Over a four-year period, researchers electrofished 5,386 brook trout from this section and moved them below a barrier. After four years of the electrofishing effort, they concluded that the operation was not 100 percent effective and recommended that some type of fish toxin be used to permanently eliminate the brook trout from the study section. In another evaluation of this technique for removing fish, Shepard et al (2014) concluded that it takes 6-14 removal treatments of two to four electrofishing passes per treatment to successfully eradicate brook trout.

Electrofishing small streams where using piscicides is not feasible has had mixed results. Moore et al. (1983) reported that electrofishing did not eliminate rainbow trout from a Tennessee stream, but helped reduce their numbers which help native brook trout re-establish. Thompson and Rahel (1996) reported similar results using electrofishing for brook trout removals to aid native cutthroat trout in a Wyoming stream. Kulp and Moore (2000) reported that five removals were required to successfully eliminate rainbow trout from Mannis Branch Creek, Tennessee. Shetter and Alexander (1970) reported there are a great number of studies available on the use of electrofishing to remove or reduce numbers of fish from streams.

The Montana Bull Trout Restoration Team evaluated electrofishing as a possible means to remove competing fish species to aid in Bull Trout recovery. The team concluded that electrofishing could be used to help suppress target species, but would not likely be successful in total removal (MFWP 1996).

These reports demonstrate that electrofishing can be successful in some instances, but requires an incredible amount of time, specific conditions for success, and several years. Numerous examples are provided to demonstrate that it can be ineffective also.

For these reasons this alternative was eliminated from further consideration.

Alternative 5 - Angling to reduce the number of unwanted fish.
FWP has the authority under commission rule to modify angling regulations for the purpose of removing unwanted fish from a lake or stream. Unfortunately, this method does not guarantee complete removal of all fish. There are a number of reasons why this method may not work, especially in remote areas. First, liberalizing bag limits does not guarantee every angler would keep all of the fish they catch primarily because of differences in value systems among anglers. Recreational angling has been shown to reduce the average size of fish and reduce population abundance. As the size and abundance of fish decreases, angler satisfaction tends to decrease also. For these reasons it may be difficult to attract anglers to a site for voluntary angling, if angling quality is poor. Second, caring for large bounties of fish in remote locations further dissuades anglers from keeping every fish they catch. Next, very small fish are not vulnerable to angling and can require as much as two years to recruit into the fishery. During this time, adult fish have the opportunity to continue reproducing. Finally, anglers in remote rugged country do not typically target streams, especially those with little or no trail access. Eliminating bag limits on streams would not likely succeed in removing fish due to difficulty in access. The amount of time required for anglers to depress or remove all fish from a lake or stream would likely require many years to accomplish. For these reasons this method of fish removal was considered unreliable at achieving the objective of complete fish removal from lakes and streams, and was eliminated from further analysis.

PART IV. OVERLAPPING AGENCY JURISDICTION

A. Name of Agency and Responsibility:
    a. Montana Department of Environmental Quality—NDPES Discharge Permit (National Discharge Pollution Elimination System) for application of CFT Legumine and 318 permit (Short-Term Water Quality Standard for Turbidity)
    b. US Forest Service—Bitterroot National Forest
    c. U.S. Fish and Wildlife Service

PART V. AGENCIES THAT HAVE CONTRIBUTED OR BEEN CONTACTED

A. Name of Agency and Responsibility:
    a. Montana Department of Environmental Quality
    b. Montana Natural Heritage Program.
    c. Montana Fish, Wildlife and Parks – Wildlife Division
    d. US Forest Service—Bitterroot National Forest
    e. U.S. Fish and Wildlife Service

PART VI. PUBLIC PARTICIPATION

A. Public involvement:

The public will be notified in the following manners to comment on the Upper Overwhich Creek Fish Removal Project, and this current Draft EA including the Proposed Action and alternatives:

- Legal notice will be published one each in these newspapers: *Independent Record* (Helena; FWP's newspaper of record), *Missoulian* (Region 2 FWP's newspaper of record), and *Ravalli Republic* (Hamilton, local project area newspaper).
- Public notice will be posted on FWP's webpage http://fwp.mt.gov ("News," then "Recent Public Notices"); the Draft EA will also be available on that webpage, along with the opportunity to submit comments online.
- Copies of this draft EA may be obtained by mail from Region 2 FWP, 3201 Spurgin Rd., Missoula 59804; by phoning 406-542-5540; by emailing shrose@mt.gov; or by viewing FWP's Internet website http://fwp.mt.gov ("Public Notices," beginning April 24, 2017).
- A news release will be prepared and distributed to a standard list of media outlets interested in FWP Region 2 issues.
- Copies of this environmental assessment will be distributed to adjacent landowners and interested parties (individuals, groups, agencies) to ensure their knowledge of the Proposed Action.

FWP will hold a public hearing in Hamilton on May 23, 2017 (Tuesday) at 7:00 p.m. at the Bitterroot National Forest Headquarters (1801 North 1st Street) to discuss the proposal, answer questions, and take public comment.

This level of public notice and participation is appropriate for a project of this scope with no significant physical or human impacts and only minor impacts that can be mitigated.

B. Duration of comment period:

The public comment period will extend for thirty (30) days. Written comments will be accepted until 5:00 p.m. on June 9, 2017 and can be mailed to the address below:

Montana Fish, Wildlife & Parks
Region 2, Attn: Sharon Rose
3201 Spurgin Rd
Missoula, MT 59804

Or phoned to: (406) 542-5540

Or emailed to: shrose@mt.gov

PART VII. ENVIRONMENTAL IMPACT STATEMENT REQUIRED?

No. Based on this evaluation of impacts to the physical and human environment under the Montana Environmental Policy Act (MEPA), this environmental review revealed no significant negative impacts from the Proposed Action. Therefore, after considering the potential impacts of the proposed action and

possible mitigation measures, FWP has determined that an Environmental Impact Statement is not warranted and an environmental assessment is the appropriate level of analysis.

The impacts of removing Westslope/Yellowstone Cutthroat Trout from Overwhich upstream of Overwhich Falls and not restock fish are described in this document. Impacts are minor and/or temporary and mitigation for many of the impacts is possible. The main negative impact is the potential for rotenone downstream of Overwhich Falls to kill some bull trout. FWP has moved the neutralization station upstream above the falls to minimize this impact. We will also move some bull trout below the falls to a location further downstream, and project personnel will be on site to try and revive any bull trout that may be affected by the toxicant. However, even with these efforts, some bull trout mortality may occur. The U.S. Fish and Wildlife Service will address these impacts during their review of the proposal. Other impacts are the loss of gill breathing organisms such as insects and larval amphibians, but these populations are resilient and would recover.

Prepared by: Chris Clancy Date: May 10, 2017

PART IV. REFERENCES

AFS (American Fisheries Society). 2002. Rotenone stewardship program, fish management chemicals subcommittee. www.fisheries.org/rotenone/.

Anderson, R.S. 1970. Effects of rotenone on zooplankton communities and a study of their recovery patterns in two mountain lakes in Alberta. Journal of the Fisheries Research Board of Canada. Vol 27, no. 8, 1335-1355

Betarbet, R., T.B. Sherer, G. MacKenzie, M. Garcia-Osuna, A.V. Panov, and T. Greenamyre. 2000. Chronic systemic pesticide exposure reproduces features of Parkinson's disease. *Nature Neuroscience* 3 (12): 1301-1306.

Billman, H.G. 2010. Investigating Effects of the Piscicide Rotenone on Amphibians in Southwestern Montana Through Laboratory Experiments and Field Trials. A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in the Department of Biological Sciences, Idaho State University. October 2010.

Bradbury, A. 1986. Rotenone and trout stocking: a literature review with special reference to Washington Department of Game's lake rehabilitation program. Fisheries management report 86-2. Washington Department of Game.

BRL (Biotech Research Laboratories). 1982. Analytical studies for detection of chromosomal aberrations in fruit flies, rats, mice, and horse bean. Report to U.S. Fish and Wildlife Service (USFWS Study 14-16-0009-80-54). National fishery research Laboratory, La Crosse, Wisconsin.

CDFG (California Department of Fish and Game), 1994. Rotenone use for fisheries management, July 1994, final programmatic environmental impact report. State of California Department of Fish and Game.

Chandler, J.H. and L.L. Marking. 1982. Toxicity of rotenone to selected aquatic invertebrates and frog larvae. The progressive fish culturist 44(2) 78-80.

Cook, S.F. and R.L. Moore. 1969. The effects of a rotenone treatment on the insect fauna of a California stream. Transactions of the American Fisheries Society 83 (3):539-544.

Cushing, C.E. and J.R. Olive. 1956. Effects of toxaphene and rotenone upon the macroscopic bottom fauna of two northern Colorado reservoirs. Transactions of the American Fisheries Society 86:294-301.

Cutkomp, L.K. 1943. Toxicity of rotenone to animals: a review and comparison of responses shown by various species of insects, fishes, birds, mammals, etc. Soap and Sanitary Chemicals 19(10): 107-123.

DNRC. 1958. Water Resources Survey. Part II. Maps showing irrigated areas in colors designating the sources of supply. Ravalli County Montana. State Engineers Office.

Dawson, V.K., W.H. Gingerich, R.A. Davis, and P.A. Gilderhus. 1991. Rotenone persistence in freshwater ponds: effects of temperature and sediment adsorption. North American Journal of Fisheries Management 11:226-231.

Dolmen, D., J.V. Arnekleiv and T. Haukebo. 1995. Rotenone tolerance in the freshwater pearl mussel Margaritifera margaritifiera. Nordic. J. Freshw. Res. 70: 21-30.

Engstrom-Heg, R. 1971. Direct measure of potassium permanganate demand and residual potassium permanganate. New York Fish and Game Journal vol. 18 no. 2:117-122.

Engstrom-Heg, R. 1972. Kinetics of rotenone-potassium permanganate reactions as applied to the protection of trout streams. New York Fish and Game Journal vol. 19 no. 1:47-58.

Engstrom-Heg, R. 1976. Potassium permanganate demand of a stream bottom. New York Fish and Game Journal vol. 23 no. 2:155-159.

Engstrom-Heg, R, R.T. Colesante, and E. Silco.1978. Rotenone Tolerances of Stream-Bottom Insects. New York Fish and Game Journal 25 (1):31-41.

EPA, 2007. United States Environmental Protection Agency, prevention, pesticides and toxic substances (7508P). EPA 738-R-07-005. Reregistration Eligibility Decision for Rotenone, List **A** Case No. 0255.

Fisher, J.P. 2007. Screening level risk analysis of previously unidentified rotenone formulation constituents associated with the treatment of Lake Davis. *for* California Department of Fish and Game. Environ International Corporation, Seattle.

Gilderhus, P.A., J.L. Allen, and V.K. Dawson. 1986. Persistence of rotenone in ponds at different temperatures. North American Journal of Fisheries Management. 6: 129-130.

Grisak, G.G., D. R. Skaar, G. L. Michael, M.E. Schnee and B.L. Marotz. 2007. Toxicity of Fintrol (antimycin) and Prenfish (rotenone) to three amphibian species. Intermountain Journal of Sciences. Vol. 13, No.1:1-8.

Gunther, H. and M. Schaefer. 2011. Rotenone review advisory committee final report and recommendations to the Arizona Game and Fish Department, December, 2011.

Hisata, J.S. 2002. Lake and stream rehabilitation: rotenone use and health risks. Final supplemental environmental impact statement. Washington Department of Fish and Wildlife, Olympia.

HRI (Hazelton Raltech Laboratories). 1982. Teratology studies with rotenone in rats. Report to U.S. Geological Survey. Upper Midwest Environmental Sciences Center (USFWS Study 81-178). La Crosse, Wisconsin.

Hughey, R.E. 1975. The effects of fish toxicant antimycin A and rotenone on zooplankton communities in ponds. Masters thesis. University of Missouri. Columbia.

Kiser, R.W., J.R. Donaldson, and P.R. Olson. 1963. The effect of rotenone on zooplankton populations in freshwater lakes. Transactions of the American Fisheries Society 92(1):17-24.

Knapp, R.A. and K.R. Matthews. 1998. Eradication of nonnative fish by gill netting from a small mountain lake in California. Restoration Ecology, vol. 6, 2:207-213.

Kulp, M.A. and S. E. Moore. 2000. Multiple Electrofishing Removals for Eliminating Rainbow Trout in a Small Southern Appalachian Stream. North American Journal of Fisheries Management 20:259–266.

Ling, N. 2002: Rotenone, a review of its toxicity and use for fisheries management. New Zealand Department of Conservation *Science for Conservation 211*. 40 p.

Loeb, H.A. and R. Engstrom-Heg. 1970. Time-dependent changes in toxicity of rotenone dispersions to trout. Toxicology and applied pharmacology 17, 605-614.

Marking, L.L. 1988. Oral toxicity of rotenone to mammals. Investigations in fish control, technical report 94. U.S, Fish and Wildlife Service, National Fisheries Research Center, La Crosse, Wisconsin.

Meronek, T.G., P.M. Bouchard, E.R. Buckner, T.M. Burri, K.K. Demmerly, D.C.Hatleli, R.A.Klumb, SH. Schmidt and D.W.Coble. 1996. A review of fish control projects. North American Journal of Fisheries Management 16:63-74.

MFWP. 1996. Assessments of methods for removal or suppression of introduced fish in Bull Trout recovery. Montana Bull Trout scientific group. *for* Montana Bull Trout restoration team, Montana Fish Wildlife & Parks, Helena.

MFWP. 2006. South Fork Flathead Watershed Westslope Cutthroat Trout Conservation Program. Environmental Impact Statement. Record of Decision. May 2006.

MFWP 2007. Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout and Yellowstone Cutthroat Trout in Montana.

Moore, S. E., B. L. Ridley, and G. L. Larson. 1983. Standing crops of brook trout concurrent with removal of rainbow trout from selected streams in Great Smoky Mountains National Park. North American Journal of Fisheries Management 3:72–80.

ODFW, 2002. Questions and answers about rotenone. *from* Oregon Department of Fish and Wildlife web page, Diamond Lake rotenone treatment, www.dfw.state.or/ODFWhtml/InfoCntrFish/DiamondLake.Rotenone.html.

Prentiss Incorporated. 1998. Product label for Prentox-Prenfish toxicant, 5% liquid formulation of rotenone. Sandersville, Georgia.

Prentiss Incorporated. 2007. Product label for CFT Legumine™ fish toxicant, 5% liquid formulation of rotenone. Sandersville, Georgia.

Schnee, M.E. 2006. Martin Lakes 1-year, post rotenone treatment report. Montana Fish, Wildlife & Parks, Kalispell.

Schnee, M.E. 2007. Martin Lakes 2-year, post rotenone treatment report. Montana Fish, Wildlife & Parks, Kalispell.

Shetter, D.S. and G.R. Alexander. 1970. Results of predator reduction on brook trout and brown trout in 4.2 miles of the North Branch of the Au Sable River. Transactions of the American Fisheries Society 2:312-319.

Shepard, B.B., R. Spoon and L. Nelson. 2001. Westslope Cutthroat Trout restoration in Muskrat Creek, Boulder River drainage, Montana. Progress report for period 1993 to 2000. Montana Fish, Wildlife & Parks, Townsend.

Shepard, B.B., L.M. Nelson, M.L. Taper and A.V. Zale 2014. Factors Influencing Successful Eradication of Nonnative Brook Trout from Four Small Rocky Mountain Streams Using Electrofishing. North American Journal of Fisheries Management 34:988–997.

Skaar, D. 2001. A brief summary of the persistence and toxic effects of rotenone. Montana Fish, Wildlife & Parks, Helena.

Skorupski, J.A. Jr. 2011. Effects of CFT Legumine™ Rotenone on macroinvertebrates in four drainages of Montana and New Mexico. Master of Science thesis, University of North Texas. August 2011.

Spencer, F. and L.T. Sing. 1982. Reproductive responses to rotenone during decidualized pseudogestation and gestation in rats. *Bulletin of Environmental Contamination and Toxicology*. 228: 360-368.

Teixeira, J.R.M., A.J. Lapa, C. Souccar, and J.R. Valle. 1984. Timbós: ichthyotoxic plants used by Brazilian Indians. Journal of Ethnopharmacology, 10:311-318

Thompson, P. D., and F. J. Rahel. 1996. Evaluation of depletion-removal electrofishing of brook trout in small Rocky Mountain streams. North American Journal of Fisheries Management 16:332–339.

Van Goethem, D, B. Barnhart, and S. Fotopoulos. 1981. Mutagenicity studies on rotenone. Report to U.S. Geological Survey. Upper Midwest Environmental Sciences Center (USFWS Study 14-16-009-80-076), La Crosse, Wisconsin

Ware, G.W. 2002. An introduction to insecticides 3rd edition. University of Arizona, Department of Entomology, Tucson. *on* EXTOXNET. Extension Toxicology Network. Oregon State University web page.

APPENDIX A

Cft Legumine, Powdered Rotenone, and Potassium Permanganate
Labels and Safety Data Sheets

CFT Legumine

Fish Toxicant

SHAKE WELL BEFORE USING

RESTRICTED USE PESTICIDE

Due to acute inhalation, acute oral and aquatic toxicity. For retail sale to, and use only by, Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.

THE APPLICATOR IS RESPONSIBLE FOR CONFORMING TO THE LABEL. IMPORTANT GUIDANCE ON THE SAFE AND EFFECTIVE USE OF THIS PRODUCT IS PROVIDED IN THE *ROTENONE SOP MANUAL*, AVAILABLE FROM THE REGISTRANT OR THE AMERICAN FISHERIES SOCIETY AT *www.fisheries.org/units/rotenone*

FOR CONTROL OF: Fish in Lakes, Ponds, Reservoirs and Streams

SPECIMEN LABEL

ACTIVE INGREDIENTS:

Rotenone	5% w/w
Cube Resins other than rotenone	5%
OTHER INGREDIENTS*:	90%
TOTAL:	100%

*Contains Petroleum Distillates

KEEP OUT OF REACH OF CHILDREN

WARNING

See Additional First Aid, Precautionary Statements and Directions for Use including Storage and Disposal Instructions

EPA Reg.No. 89459-48

EPA Est. No. Ⓐ 44616-MO-1 Ⓑ 44616-MO-2

PRECAUTIONARY STATEMENTS – HAZARDS TO HUMANS AND DOMESTIC ANIMALS – WARNING

May be fatal if inhaled. Do not breath the vapors or spray mists. May be fatal if swallowed. Causes moderate eye irritation. Harmful if absorbed through skin. Do not get in eyes or on skin or clothing.

FIRST AID

Have product container or label with you when obtaining treatment advice.

If inhaled	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice.
If swallowed	• Call a poison control center or doctor immediately for treatment advice. • Do not give any liquid to the person. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If in eyes	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may contact 1-800-248-7763 for emergency medical treatment information. You may also contact the National Pesticide Telecommunication Network at 1-800-858-7378 for information including health concerns, medical emergencies or pesticide incidents.

NOTE TO PHYSICIAN: Contains petroleum distillate. Vomiting may cause aspiration pneumonia. Symptoms of exposure include numbness, lethargy and incoordination. Decontamination, symptomatic and supportive treatment is recommended.

Safety Data Sheet

Section 1: Identification

Product identifier

Product Name - **Prentox CFT Legumine Fish Toxicant**

Synonyms - 100209000; 100209001; EPA Reg. No.: 89459-48

Product Description - Orange viscous liquid.

Relevant identified uses of the substance or mixture and uses advised against

Recommended use - Piscicide.

Restrictions on use -

KEEP OUT OF THE REACH OF CHILDREN. Avoid contact with eyes, skin and clothing. Do not use or store near heat or open flame. Avoid release to the environment. Use in well ventilated area. Avoid inhalation of vapors or fumes. For use by certified applicators or persons under their direct supervisionand only for those uses covered by the Certified Applicator's certification.

Details of the supplier of the safety data sheet

Manufacturer - Central Garden & Pet Company
1501 E. Woodfield Road, Suite 200W
Schaumburg, IL 60173
United States

www.central.com

Emergency telephone number

Manufacturer (Transportation) - 1-800-424-9300 - CHEMTREC

Manufacturer (Transportation) - 1-703-527-3887 - Chemtrec - Outside US collect calls accepted

Manufacturer - 1-800-248-7763

Section 2: Hazard Identification

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

Classification of the substance or mixture

OSHA HCS 2012 - Eye Irritation 2A
Flammable Liquids 4
Skin Irritation 2
Acute Toxicity Oral 4
Acute Toxicity Inhalation 2
Reproductive Toxicity 1B
Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects

Label elements

Safety Data Sheet

Section 1: Identification

Product identifier

Product Name - **Prentox Rotenone Fish Toxicant Powder**

Synonyms - 100209044; 100209045; EPA Reg. No.: 89459-32

Product Description - Tan to dark amber powder.

Relevant identified uses of the substance or mixture and uses advised against

Recommended use - Piscicide.

Restrictions on use - Avoid contact with eyes, skin or clothing. Do not inhale. Do not take internally.

Details of the supplier of the safety data sheet

Manufacturer - Central Garden & Pet Company

1501 E. Woodfield Road, Suite 200W
Schaumburg, IL 60173
United States

www.zoecon.com

Emergency telephone number

Manufacturer - 1-800-424-9300 - CHEMTREC

Manufacturer (Transportation) - 1-703-527-3887 - Chemtrec - Outside US collect calls accepted

Manufacturer - 1-800-248-7763

Section 2: Hazard Identification

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

Classification of the substance or mixture

OSHA HCS 2012 - Acute Toxicity Inhalation 1
Combustible Dust
Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
Eye Mild Irritation 2B
Skin Sensitization 1
Acute Toxicity Oral 3

Label elements

OSHA HCS 2012

DANGER

SAFETY DATA SHEET

1. Identification

Product identifier	**Potassium Permanganate**
Other means of identification	Not available.
Recommended use	Potassium Permanganate is an oxidant recommended for applications that require a strong oxidant.
Recommended restrictions	Use in accordance with supplier's recommendations.

Manufacturer / Importer / Supplier / Distributor information

Company name	CARUS CORPORATION
Address	315 Fifth Street, Peru, IL 61354, USA
Telephone	815 223-1500 - All other non-emergency inquiries about the product should be directed to the company
E-mail	salesmkt@caruscorporation.com
Website	www.caruscorporation.com
Contact person	Dr. Chithambarathanu Pillai
Emergency Telephone	For Hazardous Materials [or Dangerous Goods] Incidents ONLY (spill, leak, fire, exposure or accident), call CHEMTREC at CHEMTREC®, USA: 001 (800) 424-9300 CHEMTREC®, Mexico (Toll-Free - must be dialed from within country): 01-800-681-9531 CHEMTREC®, Other countries: 001 (703) 527-3887

2. Hazard(s) identification

Physical hazards	Oxidizing solids	Category 2
Health hazards	Acute toxicity, oral	Category 4
	Skin corrosion/irritation	Category 1B
	Specific target organ toxicity, single exposure	Category 1 (Respiratory System)
	Specific target organ toxicity, repeated exposure	Category 1 (Respiratory System, Central Nervous System)
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 1

OSHA defined hazards Not classified.

Label elements

Signal word	Danger
Hazard statement	May intensify fire; oxidizer. Harmful if swallowed. Causes severe skin burns and eye damage. Causes damage to organs (Respiratory System). Causes damage to organs (Respiratory System, Central Nervous System) through prolonged or repeated exposure. Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.
Precautionary statement	
Prevention	Keep away from heat. Keep/Store away from clothing//combustible materials. Wash thoroughly after handling. Do not breathe dust. Wear protective gloves/protective clothing/eye protection/face protection. Do not eat, drink or smoke when using this product. Take any precaution to avoid mixing with combustibles. Avoid release to the environment.
Response	In case of fire: Use water for extinction. If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Collect spillage. Immediately call a poison center/doctor.
Storage	Store locked up.